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ONE SHILLING.

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THE END OF THE ROYAL PROGRESS ON THE THAMES: THE KING LANDING FROM THE STATE BARGE AT CADOGAN PIER.

The course of the great river pageant of August 4, in honour of the sea services, was from the Tower Bridge to Cadogan Pier, beside the Albert Bridge at Chelsea. Our photograph shows his Majesty coming up the steps from the Royal Barge on to the pier, where may be seen the Queen, Princess Mary, and Princess Victoria, who have already landed. On the bridge beyond, decorated with flags, is a mass of cheering spectators.

Some details of the Royal Barge and the costume of the crew are well shown in this illustration. On top of the canopy in front is the royal crown, and at the back is a wreath of classical design through which the King's Bargemaster looks as he stands in the stern to steer the boat. The bargemen have a royal cypher on the back of their tunic. As the barge reached Cadogan Pier a salute of 21 guns was fired.

PHOTOGRAPH BY L.N.A.



By G. K. CHESTERTON.

THE modern industrial world, which is incessantly talking about democratic institutions, has very nearly lost all its democratic instincts. A highly comic example can be found in the modern pedantic versions of the old popular cries. English mobs in the past used to shout short unmistakable remarks that really can be shouted, such as "No Bute!" or "No Popery!" or "Wilkes and Liberty!" In France even recently they would shout short remarks which certainly ought to be shouted, such as "*Conspuez Zola!*" But the laborious and learned "democrats" of our day are perpetually using phrases beginning "*Vive*" somebody or "Down with" something; and have evidently entirely forgotten that they were ever meant to be shouted at all. In an American pro-Bolshevik paper called the *Liberator*, for instance, I find the following simple cries from the heart: "Down with the Imperialistic Conspiracy of Capital! Long Live the International Republic of the Proletarian Councils!" Can you imagine a maddened rabble rushing in thousands down the street, shattering windows and wrecking lamp-posts, and all saying simultaneously, with correct and coincident articulation, "Long live the International Republic of the Proletarian Councils"? Are you and I even apprehending, with any alarm, the day when we shall hear the shorter and brighter formula "Down with the Imperialistic Conspiracy of Capital" coming as a kind of chorus from a thousand throats?

It is obvious that the "democrats" who write in that style are remote from the very rumour of really popular things, or they would have so formulated their cry as to make it physically possible to cry it. If the eighteenth-century crowds, instead of howling "No Bute!" had attempted conscientiously to howl "The excessive intimacy of the interventions of the Earl of Bute in the domestic relations of the Hanoverian dynasty is repugnant to representative public opinion"—it is clear I say, that if they had tried to howl all that, even the watchmen and Bow Street runners of that freer and happier age would have found them in an exhausted condition after the effort, and ready to go quietly with the most inefficient police. It is clear that if the followers of Lord George Gordon, instead of roaring "No Popery!" had preferred to roar "No recurrence of the theological and ecclesiastical system common to Europe in the Middle Ages but interrupted, in a manner subject to no little historical doubt and dispute, in the course of the sixteenth century," their statement would have been more correct, if it ever was per-

mitted to be complete: but it is not certain, from a popular point of view, that their meaning would have been more clear. And yet they would have had certain advantages, in the matter of actuality, as compared with the Bolshevik mottoes which I have quoted. Bute meant a particular person—John Stuart, Lord Bute; while the imperialistic conspiracy of capital might mean all sorts of things. There has been, and probably will be, a real person called the Pope; but there never has been, and probably never will be, any such thing as the International Republic of the Proletarian Councils.

This inordinate love of long and lumbering words is alone enough to prove that a thing has not really a popular origin. If a man claimed to speak for the inmost souls and secrets of all the

And all this verbosity is the more and not the less absurd, because there are really great wrongs inflicted on the poor everywhere. And without asserting that they can always be quite simply remedied; we can all see that they could be more simply stated. I hold that what the poor really want, over a great part of the world, is land. It would give me no comfort to say that what they want is territorial acquisition. In so far as the Bolsheviks may have had the sense to leave the peasants the land, their work will probably remain, when all their wordy definitions are as dead as the sectarian controversies of the seventeenth century. In so far as they have had the clumsy pedantry to collide with the peasants, they have probably failed already, and will certainly fail in the long run. But in either case I cannot understand why the peasants, who are not proletarians,

should suddenly ejaculate in the intervals of ploughing or digging, "Long live the International Republic of the Proletarian Councils!" And most peasants I have met have been men with a simpler literary style.

But indeed it is in this contradiction that the root of the reality lies. The manifesto quoted in the *Liberator* is not the clearest document in the world; but one thing is at least clear about its social conception. It is that the peasantry is to be drawn into the orbit of the proletariat, and not *vice versa*. That is the only real meaning of the International Republic of Proletarian Councils. But, as a fact, the power would not even be in the hands of the proletarians, but in the hands of the very small number of people who talk about proletarianism. The

manifesto guards itself against the charge of destroying every small property, but it avows its general aim "further to centralise the forces of production and to subject all of production to a systematic plan." We know that systematic plan. Things centralised are managed by the few; they cannot possibly be managed by all the proletarians, let alone all the peasants. They will be managed like our own Coal Control or Beer Control. I began with some remarks on the riotous cries of mobs; and I am reminded of the paradox in one of Lewis Carroll's topsy-turvy tales. His mob, it will be remembered, called out "Less Bread! More Taxes!" But we are living in a nightmare in which the nonsense prophecies come true. And some prigs really ask us to believe that the people are shouting "Less Beer! More State Control!" But a nightmare is never true; and I fancy we shall soon wake up.



RECENTLY RECEIVED BY THE KING AT BUCKINGHAM PALACE: A DEPUTATION OF SOUDANESE CHIEFS WHO PRESENTED TO HIS MAJESTY A LOYAL ADDRESS OF CONGRATULATION ON VICTORY.

The King received the Soudanese Chiefs at Buckingham Palace on July 28, and their leader, Sir Sayed Ali El Mirghani, read an eloquent Address in Arabic (interpreted by Sir Reginald Wingate), congratulating his Majesty on the victory achieved and expressing the loyalty of the Soudan. Our photograph shows (from left to right) Sheikh Ibrahim, son of El Hag Mohammed Farah; Sheikh Ali El Tom; Sayed Ismail El Azhari; Sheikh El Tayeb, son of Ahmed Hashem, Grand Mufti of the Soudan; Sir Sayed Ali, son of Mohammed Osman El Mirghani, K.C.M.G. (leader of the deputation); Sayed Abd El Rahman, son of Mohammed Ahmed El Mahdi (the Mahdi); Sheikh Abu El Gassen, son of Ahmed Hashem; Sheikh Ibrahim, son of Musa Ibrahim, son of Mohammed Ahmed El Mahdi (the Mahdi); and Sheikh Awad El Kerim, son of Abdalla Abu Sin.

Photograph by Vandyk.

American negroes, and I found he knew no language except Chinese, I should doubt the direct democratic nature of his authority. And I would as soon a popular tribune talk Chinese as jabbered all that pedantic pidgin English about class-conscious proletarians and bourgeois social-patriots. If a man said his speeches went straight to the hearts of the people of Poland, and that he was in the habit of addressing them explicitly in the language of Patagonia, I should suspect that only a select and cultivated minority of Poles could follow him with ease. And I am quite sure that only a minority among the multitudes of poor men I have known and respected would bother their heads about anybody who could only talk in words of six syllables like proletarianism. So far as they go, these catch-words carry with them the evidence of belonging to minorities. They are not, and never could be, the cries of a revolution; they are rather the pass-words of a conspiracy.

VICTORY CELEBRATIONS BY WATER: THE PAGEANT ON THE THAMES.

PHOTOGRAPHS BY ILLUSTRATIONS BUREAU, C.N., NEWSPAPER ILLUSTRATIONS, AND I.N.A



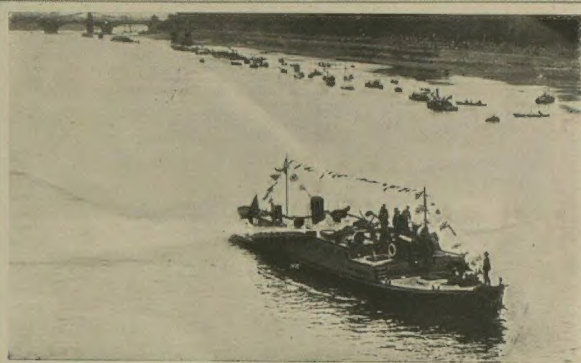
THE HUGE CROWD ON WESTMINSTER BRIDGE DURING THE RIVER PAGEANT: THE ADMIRALTY BARGE PASSING BENEATH.



GIVING LONDONERS A GLIMPSE OF THEIR WONDERFUL SPEED: TWO COASTAL MOTOR-BOATS GOING PAST WESTMINSTER.



WITH THE WHITE ENSIGN AT THE STERN AND A GOLDEN SEA-HORSE AT THE BOW: THE ADMIRALTY BARGE.



RIVER FIREMEN GIVING A DISPLAY BEFORE THE KING AND QUEEN OFF CADOGAN PIER: THE HOSE AT WORK.



PAST AND PRESENT IN THE PAGEANT: A MODEL OF AN 18-INCH NAVAL GUN WITH TWO LITTLE OLD GUNS BELOW IT



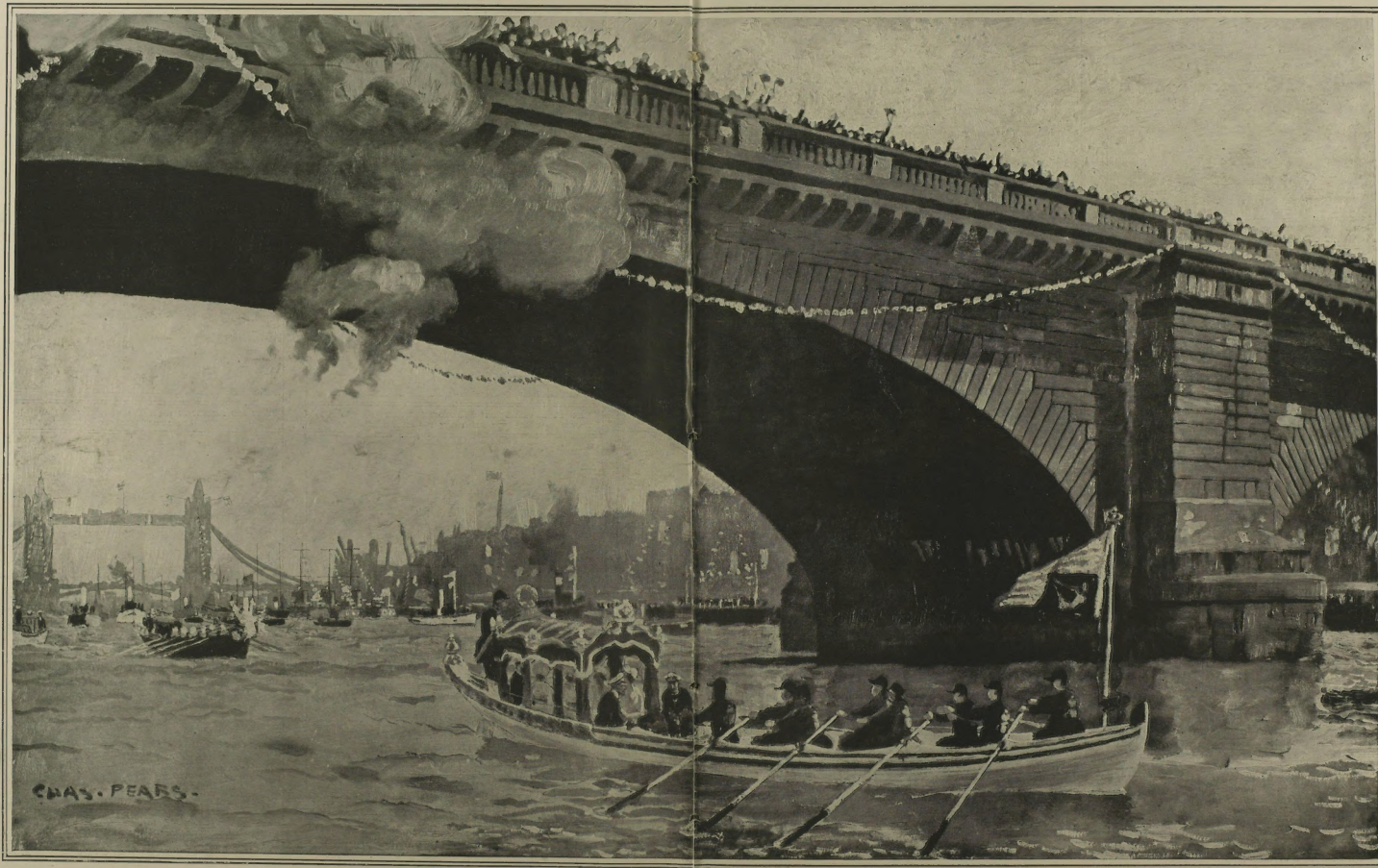
THE ARRIVAL OF THE ROYAL BARGE AT CADOGAN PIER: THE PRINCE OF WALES LANDING, PRECEDED BY PRINCESS VICTORIA.

The start of the great river pageant of August 4 from the Tower Bridge, and the landing of the King at Cadogan Pier, are illustrated in other pages of this number. Here we show various craft in the procession and incidents of the programme. The Admiralty Barge, which followed immediately behind the Royal Barge, is painted in dark blue, with a gilded sea-horse at the bow and a row of shells round the stern. The long red oars have blades of blue and gold. The boat is a Service cutter, which was reconstructed

for the occasion at Chatham. An interesting item in the procession was a model of one of the big 18-inch Naval guns which have a range of 25 miles. To set off its immense size, there were underneath it on the barge that carried it two little guns of earlier days, one dating from the year 1600 and the other (larger one) from 1856. The bridges were packed with people, as also was every point of vantage for viewing the scene from the banks, and there was great cheering as the Royal Barge passed.

THE RIVER PAGEANT OF THE SEA SERVICES: THE ROYAL BARGE PASSING UNDER LONDON BRIDGE.

DRAWN BY OUR SPECIAL ARTIST, CHARLES PEARCE.



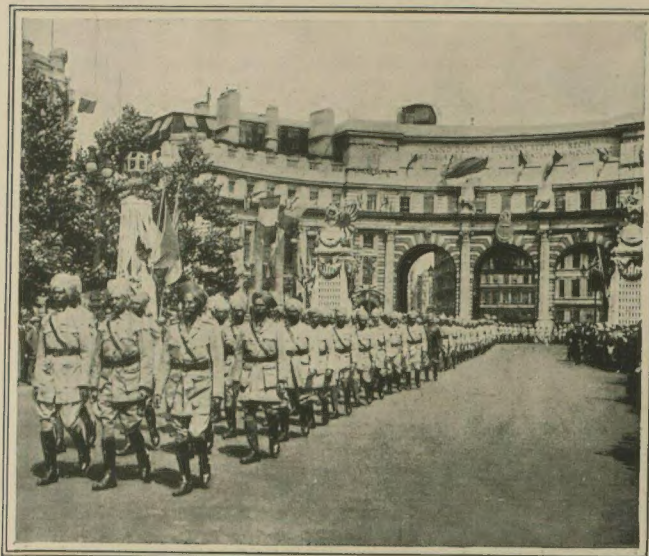
THE ROYAL PROGRESS ON THE THAMES ON THE FIFTH ANNIVERSARY OF THE WAR: THE COMMENCEMENT OF THE RIVER PROCESSION FROM THE TOWER TO CHELSEA.

The great river pageant through London, held to commemorate the services of the Navy and the Mercantile Marine, and every profession associated with them, took place on the afternoon of Monday, August 4, the fifth anniversary of the British entry into the war. Our drawing shows the Royal barge, just after the start from the Tower Bridge, passing under London Bridge followed by the Admiralty Barge. The royal party on board comprised the King (seen sitting in the stern), the Queen, Queen Alexandra, Princess Mary, Princess Victoria, the Prince of Wales (in front of the canopy on the starboard

side), and Prince Albert (sitting opposite to him). Behind his Majesty is standing the King's Barge-master, Mr. W. G. East, M.V.O., steering the craft. The Royal Standard floats at the bow. On London Bridge above, hung with festoons of flowers, is a crowd of cheering spectators. In the background, seen through the arch, are other boats in the Upper Pool not yet in their order of procession, and beyond them three destroyers seen just to the right of the Tower Bridge, which is decorated with flags, so also are the warehouses and gantries seen on the south side of the river. (Drawing Copyrighted in the United States and Canada.)

THE INDIAN ARMY'S VICTORY MARCH IN LONDON: A ROYAL REVIEW.

PHOTOGRAPHS BY L.N.A., BALDWIN, AND NEWSPAPER ILLUSTRATIONS.



GRAVE, BEARDED INDIAN WARRIORS IN LONDON: THE PROCESSION PASSING THROUGH THE ADMIRALTY ARCH INTO THE MALL.



THE INDIAN ARMY'S MARCH FROM WATERLOO TO BUCKINGHAM PALACE: GURKHAS IN TRAFALGAR SQUARE.



TYPES OF INDIAN TROOPS: A GURKHA.



TYPES OF INDIAN TROOPS: A PATHAN.



TYPES OF INDIAN TROOPS: A PUNJABI.



TYPES OF INDIAN TROOPS: A SIKH PIONEER.



COMMEMORATING CAMPAIGNS IN WHICH THE INDIAN ARMY PLAYED A SPLENDID PART: STANDARD-BEARERS.

On Saturday, August 2, some 1800 British and native troops of the Indian Army marched in procession through London from Waterloo to Buckingham Palace, where they were inspected by the King-Emperor. It may be recalled that the Indian Contingent, owing to an outbreak of influenza on board ship on the voyage to England, could not arrive in time to take part in the general Victory March of July 19. As was fitting, they were well compensated by the enthusiastic welcome they received. After inspecting them, his Majesty addressed the men and

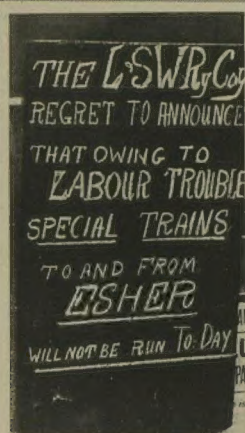


DECORATING AN INDIAN HERO: THE KING-EMPEROR GIVING THE V.C. TO NAIK KARANBAHADUR RANA, GURKHA RIFLES.

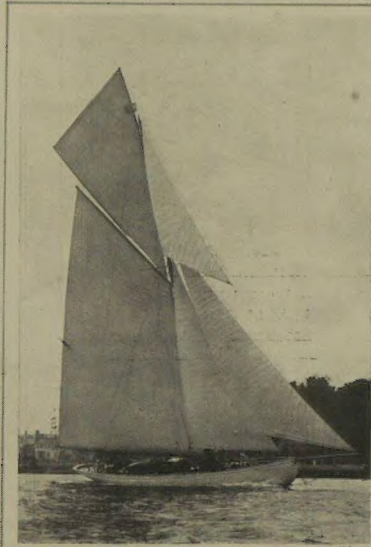
thanked both the British and Indian troops of the Indian Army for their magnificent services and their loyal devotion, making special mention of the Imperial Service troops, and thanking also the native Princes of India and their subjects for all they did in the war. The troops then gave three cheers for the King-Emperor, and his Majesty next bestowed a number of decorations, including the Victoria Cross awarded to Naik Karanbahadur Rana, of the Gurkha Rifles, for a heroic action at El Kefr, in Egypt, on April 10, 1918.

NEWS BY CAMERA: STRIKES AND HOLIDAY-MAKERS; YACHTING AT COWES

PHOTOGRAPHS BY G.P.U., CENTRAL PRESS, SPORT AND GENERAL, AND L.N.A.



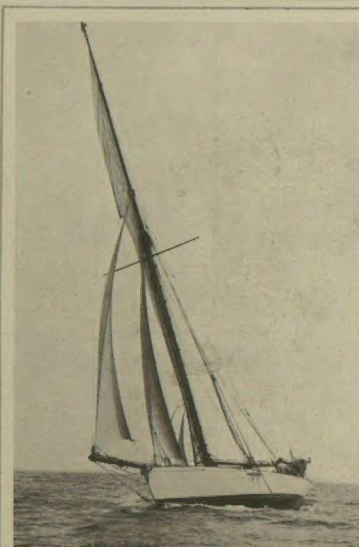
A RESULT OF THE "SYMPATHY" STRIKE ON THE L. AND S.W.R.: RACEGOERS AND HOLIDAY-MAKERS "MAROONED" AT WATERLOO.



THE MOST RECENTLY BUILT YACHT AT COWES: MR. COOK'S CUTTER, "THANET."



THE WINNER OF THE FIRST EVENT: MR. F. S. HOHLER'S YAWL, "CELIA."



THE 2ND R.L.Y.C. RACE: MR. ARBUTHNOT'S CUTTER, "BAMBA" (WINNER).



THE "BREAD" STRIKE: MR. W. BANFIELD, GENERAL SECRETARY OF THE BAKERS' UNION.



PRESIDENT OF THE NATIONAL UNION OF POLICE AND PRISON OFFICERS: MR. J. MARSTON.

The first post-war August Bank Holiday was marked by a series of "surprise" strikes which greatly interfered with the comfort of sport-lovers and holiday-makers. Starting with the "surprise" police strike which failed dismally in most parts of the country, a series of "sympathy" strikes was attempted, with the result that racegoers and holiday-

makers were considerably inconvenienced. Cowes Regatta, however, for the first time since August 1913, took place with success; and, although the programme for the first day was not very ambitious, the entries were good, there being thirteen for the three events, all handicaps, under the auspices of the Royal London Yacht Club.

LOOTING AT LIVERPOOL: TROOPS; TANKS; A WAR-SHIP IN THE MERSEY.

PHOTOGRAPHS BY TOPICAL AND ILLUSTRATIONS BUREAU.



ANCHORED IN THE MERSEY NEAR THE HEART OF LIVERPOOL: THE BATTLE-SHIP H.M.S. "VALIANT."



WHERE A MILE OF SHOPS WERE BROKEN INTO AND LOOTED. SOLDIERS ON GUARD IN SCOTLAND ROAD.



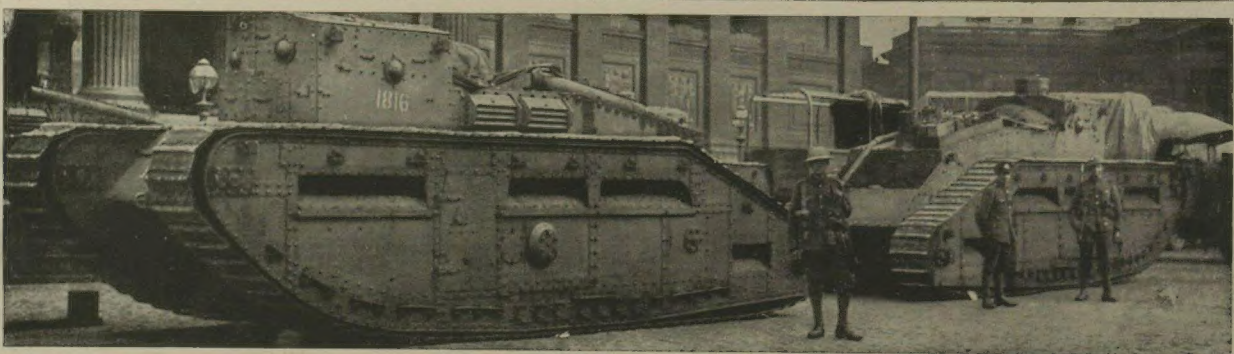
WITH THE PAVEMENT LITTERED WITH COSTUMIERS' DUMMIES. SOLDIERS POSTED OUTSIDE A LOOTED SHOP.



OUTSIDE A SHOP WRECKED BY LOOTERS IN LIVERPOOL: SOLDIERS ON GUARD.



A DAIRY AND A HOSIER'S PREMISES AFTER BEING LOOTED: A SOLDIER ON DUTY.

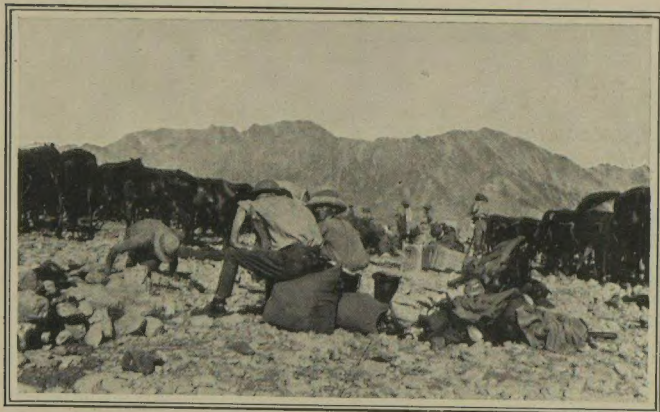


TANKS OUTSIDE ST. GEORGE'S HALL: ONE OF THE MILITARY PRECAUTIONS FOR QUELLING DISTURBANCES.

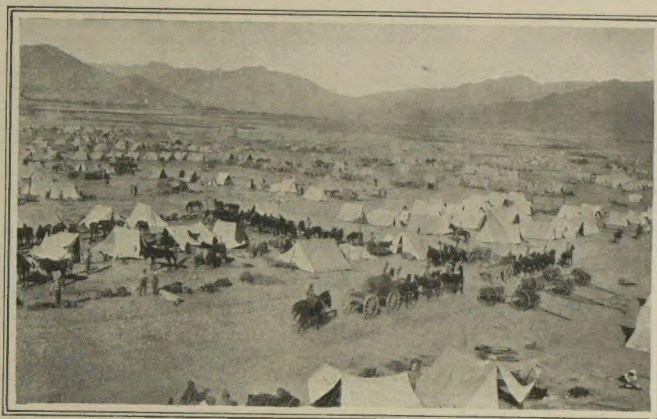
Following on the recent strike of police in Liverpool, serious rioting broke out in the city on August 2, and the mob took advantage of the depletion of the forces of law and order to break through the windows of shops and loot their contents. In Scotland Road, it was reported, shop-fronts were thus wrecked for a distance of more than a mile, and similar scenes took place in London Road and other parts of that locality. The police

who had remained on duty, assisted by "Specials," made baton charges. There were also bayonet charges by troops, and a volley was fired over the heads of the crowd. On the 5th it was stated that Liverpool was surrounded by a military cordon. Tanks were posted outside St. George's Hall, and the battle-ship "Valiant" anchored in the Mersey, in readiness for eventualities. Nearly 370 arrests were made.

FIGHTING IN AFGHANISTAN: AN ATTACK ON OUR CAMP AT DAKKA.



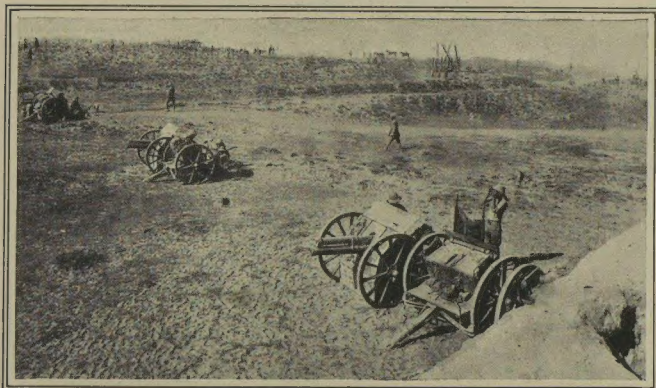
BEFORE THE AFGHAN ATTACK, MADE FROM THE HILLS IN THE BACKGROUND: PART OF THE DAKKA CAMP.



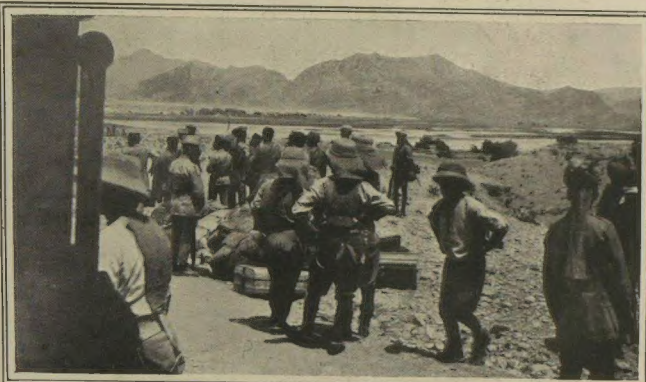
AFTER THE AFGHAN ATTACK HAD BEEN REPULSED: A GENERAL VIEW OF THE CAMP AT DAKKA.

THE fighting in the neighbourhood of Dakka was described as follows in a message of May 17, from a "Times" correspondent with the British Afghan Frontier Army: "Our forces at Dakka were heavily attacked yesterday on their south-west flank. After severe fighting the enemy was driven off and all is quiet now, except for sniping. I witnessed brisk fighting in the Khyber, when 150 of the enemy attacked convoys passing a hill a mile and a-half from Ali Masjid.

Gurkhas rushed up under heavy fire and gallantly engaged the enemy, and a mountain battery found excellent targets, causing severe casualties. The interrogation of prisoners emphasises the terrifying effect of air-attacks. They were not afraid of rifle-fire, but were scared by big guns and aeroplanes. They state that 2000 fighting tribesmen were in Dakka when it was bombed, and there were 100 casualties. Yesterday the enemy were driven back west of Dakka."



BRITISH ARTILLERY IN ACTION AT DAKKA LAST MAY: GUNS OF "M" BATTERY, R.H.A.



THE ARRIVAL OF AFGHAN ENVOYS: A GROUP WAITING AT AN OUTPOST NEAR DAKKA ON MAY 15.

AT the Peace Conference at Rawal Pindi on July 26, after Sir Hamilton Grant's address, the leader of the Afghan delegation, Sirdar Ali Ahmad Khan, spoke. He admitted that the British were powerful and superior in men, guns, and aeroplanes, but denied that the Afghans had been the first to ask for peace. "The Indian Government," he continued, "must not suppose that the Afghans are a sleepy and ignorant people. The European war has aroused the aspirations of all

nations. Through the friendship of Afghanistan to Great Britain, their country has stood as a barrier between India and Bolshevism. If war is renewed, and if the British win, such a victory will admit into India a flood of Bolshevism, under which Russia is already submerged. A just and honourable peace would check the flood as far as the Caspian." It was reported on July 28 that the Ameer Amanullah had been shot at by two soldiers of a Kabul regiment.



IN A CAR WITH A WHITE FLAG: AN AFGHAN GENERAL CAME TO ASK FOR AN ARMISTICE, ON MAY 15.



TYPES OF MEN FIGHTING ON THE NORTH-WEST FRONTIER: AFGHAN "REGULARS."

It may be recalled that the late Ameer of Afghanistan, Habibullah Khan, was murdered last February, and was eventually succeeded by Amanullah Khan. Later, the Afghans began an offensive against the British forces in the neighbourhood of the Khyber Pass. Hostilities continued for some time, until recently an armistice was concluded, and the

Afghans sent envoys to a Peace Conference, who arrived at Rawal Pindi on July 27. The speech of their leader is quoted above, where will also be found a note on the action at Dakka here illustrated. Though the war with the Afghans was thus suspended, there has been other fighting on the frontier since with turbulent independent tribesmen.

THE APPLICATION OF ART TO WAR.

By LIEUT.-COLONEL SOLOMON J. SOLOMON, R.A.

WITH the advent of aerial photography, the proverbial "other side of the hill" no longer existed. But not until we had brought down a German aeroplane and developed the films found on it did we realise its extraordinary capacity, and that battlefields and miles behind them, with every incident, every clue, on the laid-out landscape, could be recorded on the sensitive plate with an inconceivable distinct-

ness, which, read with intelligence and an adequate faculty for co-ordinate deduction, would disclose so much as a belligerent wants to know of the movements and intentions of his opponent.

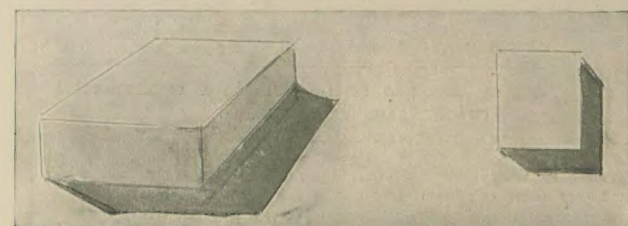


DIAGRAM A.

ness, which, read with intelligence and an adequate faculty for co-ordinate deduction, would disclose so much as a belligerent wants to know of the movements and intentions of his opponent.

It became obvious that ingenuity and artistic resourcefulness must be called in to cover up lines, restore the scarred landscape—at least in appearance—to its original condition where possible, or confuse, by a multiplication of them, incriminating incidents which might be impossible to hide. The camoufleur whose business it is to foil the camera must satisfy himself that what he does will stand the test under every condition of sunlight; and the "reader" who is not, but ought to be, a camoufleur—on the principle of setting a thief to catch another—should be able to interpret the significance of every tone, line, or shadow of the black-and-white picture in the unaccustomed vertical view of the countryside, which is practically a microscopically illustrated military map.

Colour, which disappears as such from the height now nearly always necessary to fly, is hardly discernible; and paint unscientifically applied in post-impressionist patterns, which stand in the popular imagination for the art of camouflage, was in most cases a source of danger. It advertised the military character of erections, and invited trouble.

When the Germans wished us to mistake a dummy for something of military importance, they deliberately made copies of our conventions. But senseless fashions die hard. An artist subaltern who had disguised a position most effectively with natural material at hand angered his Colonel, who had indented for paint and meant to use it like the others. Guns can be detected from ten miles out at sea, only because of the shine of new paint on them.

Under the heading of real camouflage, above all must come camouflage discipline. The signs of activity disclosed by wagon-tracks and worn paths made by men diagonally across fields (a mere flattening of grass will tell), or indications of work-wear around positions, entirely neutralise any attempt to disguise them. One might as well bury one's head in the sand and flaunt one's tail in the air, and expect to escape attention. Usually with us the camoufleur is called in to correct much that could be avoided were he, as he should be at the outset, the controller of the whole war landscape, from the bases to the Fronts, which, when this subject is properly understood, will be his rôle in any future war.

As an illustration of this necessity, let us take the surprise attack of the Germans on the Italian Army in October 1917. The Carnic Alps run east and west. In the late autumn the sun rises and sets some degrees below the east and west, so there is constant shadow on the north side of these hills and across the valleys. When it is understood that what is in shadow is hardly discernible in an aerial photograph, one can realise how easy it was for concentrations to be made on the north side of those hills, within striking distance of the forces on the south of them, where but a minimum of camouflage would be needed to conceal effectively the presence of men and material. The Germans used their camouflage strategically. Technically considered, the elimination or avoidance of shadow is what really matters.

A solid object itself might not be seen but for its shadow. An erection with upright sides, such as a hangar, will cast a definite shadow on the ground in sunlight, according to its height and the position of the sun, which in the aerial photograph will appear as in Diagram A. But if, if the sides of an erection slope at about ten to fifteen degrees, there will be no cast shadow on the ground till near sunset, and it will appear on the vertical photograph, if judicious counter-shading is used, practically flat. (Diagram B.)



DIAGRAM B.

When this principle is applied to an erection big enough to cover in whole strips of field among others of various growths—which, by the way, appear light or dark according to the density of vegetation on them—it can be made, with some art, an almost indistinguishable part of the landscape.

The photograph of a so-called splinter-proof shelter outside Antwerp which appeared in *The Illustrated War News* illustrates this principle applied by the Germans, the significance of which at the time was certainly not understood. Subsequent discoveries of a wholesale application of this method, unfortunately rather late in the war, show that the enemy had mastered most of the enormous possibilities of the science long before 1914, and his preparations were on so vast a scale that probably, with the submarine and Zepelin, it was one of the determining factors which precipitated his decision to fight. With the aid of it, they undoubtedly brought about the almost disastrous surprises in

March 1918, and took the greatest pains to destroy all traces of it in the subsequent retreat. It had served them throughout the war, and might be useful in the next. What was left standing in France was often whole orchards and great fields and roads covered over in a material, not dissimilar to our own, of wire threaded with strips of wood fibre and other openwork stuffs in quantities capable of concealing large numbers of troops.

But the main principle of the more important camouflage was the use of the gradual slope over worked fields, and what might be called modelled Earl's Court scenery for the imitation of other parts of the landscape. One of which is explained here.

In the middle of a village in a very important strategic position, of which practically the whole, as well as surrounding apparently cultivated fields and roads were under solid covering, was a railroad. The high tunnelled covering over the roads could not be taken, for obvious reasons, through the village itself, so the higher traffic took a cross-country route to get on to the main road to the German front, and went under this covered-in railroad. A perspective section drawing is given on the facing page, which explains the aerial photograph of the trucks, lines, and so on.

It will be seen that from the cover over the fields to the north there is a rising in tiers, some of which are supposed to represent the rails. These rails are on an incline, and are very roughly modelled, and we go up

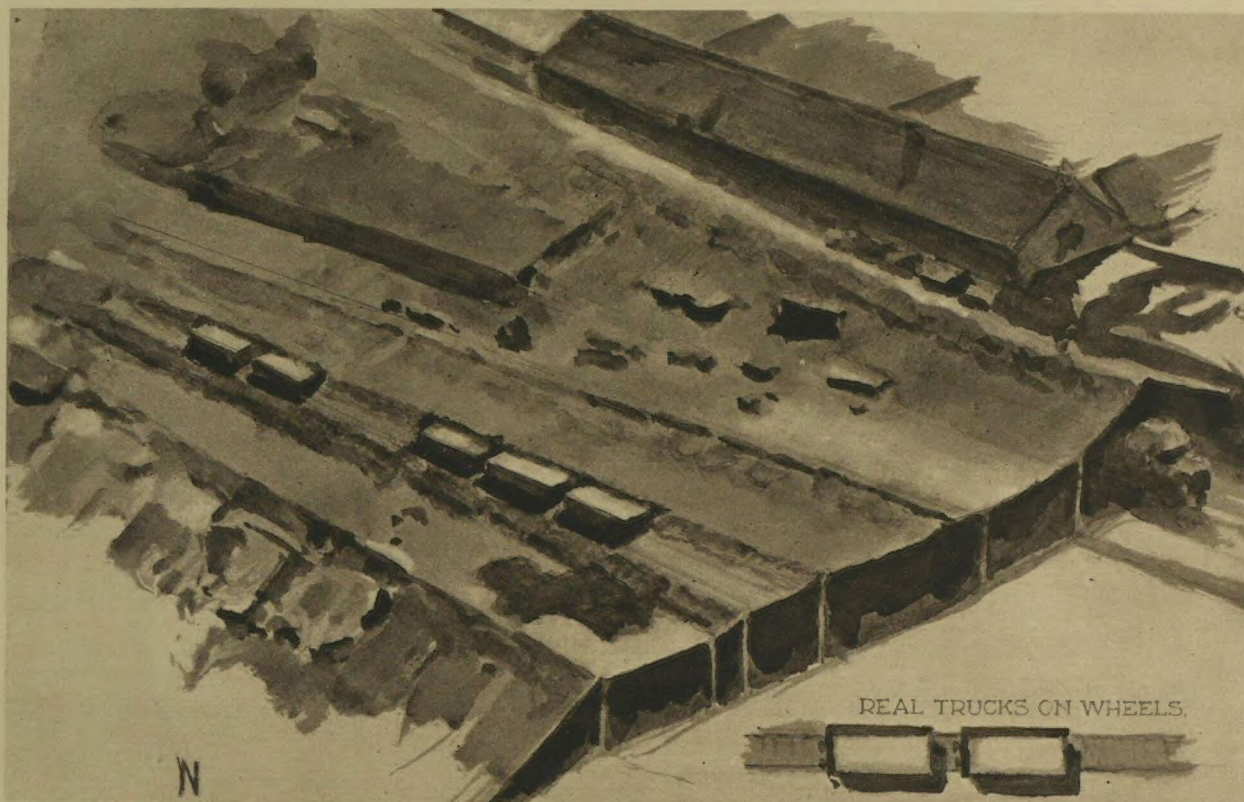
and up, for each bar of tone represents a rise, just as with a flight of steps. The sun is at about mid-day, and so to the south of them. Notice a tier immediately behind the trucks, which are modelled in the general covering material, so that light goes through the interval left between the top flat which answers for the floor of the truck and the overhanging, irregularly-edged cover to their south. Remark also that some trucks are between, not on, the lines. The dump of timber and so on lying on the sloping embankment, which we are to conclude had been conveyed on these rails, are, with the exception of the pontoons, so much modelled fudge, put where they are to make the slope appear flat, to let in light below, and to give a sense of solid earth to the hollow cover—an effective trick of the German camoufleur. This is but a sample of the treatment of the whole area—a staging position for at least two divisions of men at a time; and, with all its faults, sufficed to trick our inadequately trained readers throughout the war.—[Continued on page 224]



AS SEEN ON AN AERIAL PHOTOGRAPH, AN ALMOST INDISTINGUISHABLE PART OF THE LANDSCAPE: A GERMAN "CAMOUFLAGE" SHELTER TO CONCEAL TROOPS—1914.

THE ART OF CAMOUFLAGE IN WAR: GERMAN "EARL'S COURT SCENERY."

DRAWING BY LIEUT.-COLONEL SOLOMON J. SOLOMON, R.A.



"A STAGING POSITION FOR AT LEAST TWO DIVISIONS": A DRAWING BY LIEUT.-COLONEL SOLOMON J. SOLOMON TO EXPLAIN THE CAMOUFLAGE SHOWN IN THE AERIAL PHOTOGRAPH BELOW.



A CAMOUFLAGED "RAIL-HEAD" CONSTRUCTED BY THE GERMANS AS A SHELTER FOR TROOPS: AN AERIAL PHOTOGRAPH OF A VILLAGE OF STRATEGIC IMPORTANCE.

Lt.-Col. Solomon J. Solomon, the famous artist and Royal Academician, who was employed on special military duty, explains in an article on another page the great importance in modern warfare of the art of camouflage. The Germans, he points out, used it more thoroughly than we did. "The main principle," he writes, "was the use of the gradual slope over worked fields, and what might be called Earl's Court scenery for the imitation of other parts of the landscape." With particular reference to these illustrations, he

says: "In the middle of a village in a very important strategic position, of which practically the whole, as well as surrounding apparently-cultivated fields and roads, was under solid covering, was a railhead." The perspective section drawing at the top represents part of the scene shown in the aerial photograph underneath, and indicates the nature and purpose of the device. Further details of this example of German camouflage are given in Col. Solomon's article.—[Drawing Copyrighted in the United States and Canada.]

HONOURING "THE GLORIOUS DEAD" OF THE CIVIL WAR: U.S. VETERANS.

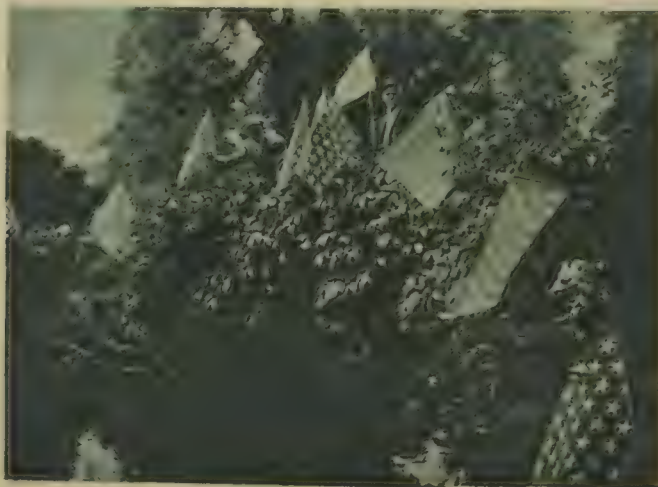
PHOTOGRAPHS SUPPLIED BY F. J. KOEN.



SPIKED WITH ROSES IN MEMORY OF THE DEAD: AN OLD GUN USED IN THE AMERICAN CIVIL WAR.



A FLOWER-LADEN BOAT TO BE LAUNCHED AND OVERTURNED ON THE LAKE: AT SPRING GROVE CEMETERY.



DECORATIONS IN MEMORY OF NORTH AND SOUTH HEROES OF 1861-65: FLAGS AMONG THE TREES.



WITH A WREATH OF HONOUR HUNG UPON IT: A STATUE COMMEMORATING CIVIL WAR HEROES.



CIVIL WAR VETERANS WHO ARE NOW JOINED BY YOUNGER "VETERANS" OF THE GREAT WAR: DRUMMERS.

Almost ever since the close of the American Civil War in 1865, veterans of both North and South have met every year on Memorial Day to decorate the graves of their heroic dead. As time goes on, the little company of survivors gradually decreases, but this year their ranks have been swelled by younger veterans home from the Great War. The veterans decorate old cannon with flowers, hang wreaths on statues, and place flowers

on soldiers' graves. At Spring Grove Cemetery, where the above photographs were taken last Memorial Day, Naval veterans of the Rebellion enact a touching custom every year. They launch on the lake a model ship laden with flowers as a memorial to their own dead, and then the ship is overturned so that the blossoms are scattered, symbolically, on the waters, in memory of other waters beneath which their former comrades lie.

BOUND FOR CANADA AND THE U.S.A.: THE PRINCE AND HIS SHIP.

PHOTOGRAPH OF THE PRINCE OF WALES BY BASSANO (SPECIAL SITTING); THAT OF THE "RENOWN" BY CHIBB, SOUTHSEA.

THE general plan of the Prince's tour in Canada comprises visits to the chief centres in the Maritime Provinces, ending at Quebec; an overland trip, north of the Great Lakes, through the silver-mining region and the great grain prairies, through the Rockies to British Columbia, and then back to Montreal. At Toronto the Prince will see the Exhibition, and at Ottawa he will lay the foundation-stone of a new tower for the Parliament Buildings. At Banff, in the Rockies, an Indian deputation will present an address of welcome and give a display. During the return journey the Prince will get some duck-shooting on the Qu-Appelle Lakes, and will visit Niagara. The Canadian tour will probably end in October.



IN accepting on behalf of the King President Wilson's invitation for the Prince of Wales to visit the United States, as the guest of the American Government, Lord Curzon wrote: "It gives the King the greatest pleasure to accept this invitation both on personal grounds and as a mark of the intimate relations that so happily exist between the American and British peoples, drawn ever more closely together by the imperishable memories of comradeship in the recent war. The King would propose that at the close of his Canadian tour the Prince of Wales, on his return from the West, should accept the hospitality of the United States Government for a few days at Washington . . . and a brief visit to New York."

TAKEN JUST BEFORE LEAVING FOR CANADA AND THE UNITED STATES:
THE PRINCE OF WALES, IN NAVAL CAPTAIN'S UNIFORM.



COMMISSIONED TO CONVEY THE PRINCE OF WALES ACROSS THE ATLANTIC FOR HIS CANADIAN AND AMERICAN TOUR: H.M.S. "RENOWN,"
A WAR-TIME BATTLE-CRUISER ORIGINALLY BEGUN AS A BATTLE-SHIP.

It was arranged that the Prince of Wales should leave Portsmouth on Tuesday, August 5, on board H.M.S. "Renown," with an escort of two light cruisers, to cross the Atlantic for his visit to Canada and the United States. The Canadian tour was arranged first, and then came an invitation for the Prince from President Wilson, which the King accepted. The ship chosen to take the Prince oversea, H.M.S. "Renown," was originally begun as a battle-ship under the 1914-15 programme, but in view of the experience of

the Battle of the Falkland Islands, she and her sister ship, the "Repulse," were converted into fast battle-cruisers of new design. The "Renown," which was built by the Fairfield Company, was launched on March 4, 1916, and underwent her trials the following September. Her over-all length is 794 ft., and she has a speed at load draught of 32 knots. During the recent flight of the airship "R 34" to New York and back, the "Renown" cruised in the Atlantic to render aid if required.

BOOKS OF THE DAY

By E. B. OSBORN.

THE true history of the French Revolution has yet to be written. Carlyle, besides being very inaccurate and grossly prejudiced, produced nothing but a philosophic rhapsody, a legend invented by a literary showman of genius comparable with the notorious Barnum.

Whose drum and naphtha scandalised the seas.

It is on the basis of his legend that the masterpiece of Dickens is built, and, indeed, all the popular conceptions which obtain in this country. In France, as M. Gustave Bord points out, the real facts of the Revolution have been concealed by a "conspiracy of history," and the one question really worth answering was this alleged experiment in democracy a success from the people's point of view?—remains unanswered. Though it was in their cause that this terrible upheaval was ostensibly engineered, yet the masses are precisely the portion of the nation ignored by Royalist and Revolutionary historians alike—the former concerning themselves chiefly with the trials of the Monarchy and the aristocracy; the latter exhausting their eloquence in constructing panegyrics on the Revolutionary leaders. Thus Michelet made Danton his hero, while Louis Blanc chose Robespierre; Lamartine was a Girondiste; and Thiers and Mignet were Orléanistes, both as historians and politicians, seeing that their white-washing of the Duc d'Orléans was only a part of a reasoned policy for placing his son Louis Philippe on the throne of France. Many other writers, of all nationalities, see in the French Revolution a movement which, from first to last, aimed consciously at creating Republic institutions. But, as Camille Desmoulins afterwards confessed, "There were not ten of us Republicans in 1789" (he himself in that year was an enthusiastic admirer of the Duc d'Orléans), and none of the earlier revolutionaries, with the possible exception of Lafayette, had any such definite ideas of reconstruction—their sole idea was utterly to sweep away the existing social order, while acting on the maxim of St. Just: "Whoever stops half-way in revolution digs his own grave." And all these apologists of Republicanism ignore the fortunes of the masses of the people during the hateful years which reduced them to unthinkable misery, and saw at least a million victims deliberately destroyed—for depopulation was an integral part of the Jacobin plan, as it is to-day of Lenin's policy.

In "THE FRENCH REVOLUTION: A STUDY IN DEMOCRACY" (Constable and Co.; 21s. net), by Nesta H. Webster, a serious and successful attempt is made to present in outline the dread realities, especially the effects thereof on the inarticulate and passive masses, of a still-living event best defined, perhaps, in another saying of St. Just: "La révolution populaire était la surface d'un volcan de conjurations étrangères." Mrs. Arthur Webster, as her previous work, "The Chevalier de Boufflers," proved beyond doubt, is a skilled and industrious historian, with a gift of scientific disinterestedness and a style which is a model of lucidity. She has sought the sources of first-hand evidence, needless to say, and has thrown new light on the origin of the terrible art of engineering popular tumults. We know that Bolshevism is a German invention, but how many are aware of the fact that Jacobinism also originated in Germany? No doubt it was Rousseau, that expert in private vices and public virtues, who first sowed in men's minds the idea that all civilisation was a crime and a blunder—that the Golden Age lay far back in the prehistoric past, and bright, broken glimpses of it could be seen in the life of existing savage communities—that true happiness for humanity could only be found in the universal return to primeval conditions

But, as Mrs. Webster shows, the Order of the Illuminati, founded in 1776 by Adam Weishaupt, a professor of the University of Ingolstadt in Bavaria, was the first attempt to organise the ruin of civilisation. Weishaupt, described by M. Louis Blanc as "one of the deepest conspirators that ever existed," had adopted the name of Spartacus—the leader of the famous insurrection of slaves in ancient Rome—and he aimed at nothing less than world revolution. Quintin Craufurd, the friend of Marie Antoinette, writing to Pitt in 1792, observed: "There is a great resemblance between the maxims, as far as they are known, of the Illuminés and of the early Jacobins, and I am persuaded that the seeds of many of those extravagant but diabolical doctrines that spread with such unparalleled luxuriance in the hotbeds of France were carried from Germany."

In point of fact, German disciples of the second Spartacus (from whom the German revolutionaries of to-day take their party name of Spartacists) were brought to Paris at Mirabeau's instigation to initiate the members of a lodge of his evil Order in Paris; and the Club Breton, the first revolutionary organism in France, later to be known as the Club des Jacobins, was from the first dominated by Illuminist ideas. Weishaupt—Robespierre—Marx—Lenin—Bakunin—all these men held,

used and abused during the Revolution, suffering all manner of outrages of which death was the least, though Trudhomme places the death-roll at no less than 1,025,711 persons—the vast majority "persons of no account," according to one of Carrier's brutish agents.

We are, as Mrs. Webster says, once more in "the cycle of revolution," and every book is invaluable which helps us to understand the dangers that are imminent. "YASHKA" (Constable and Co.; 7s. 6d. net) is a thrilling account, "set down by Issac Don Levine," of the experiences of Maria Botchkareva, formerly Commander of the Russian Women's Battalion of Death. It is an amazing picture of the horrors of mob-rule by one who met Lenin and Trotsky face to face and gave the lie to their pretence of fighting for an order of social equality, and is defined by the narrator of her adventures (Botchkareva herself is quite illiterate) as a Russian Joan of Arc, in her strength and weaknesses a true type of the essential still-living Russia, "that inchoate, invincible, agonised, striving, rising colossus in all its depth and breadth." There is a quality of *proterus*, the Russian sense of illimitable horizons, in this strange book which makes it fascinating beyond words.



THE HEAD OF THE ANTI-BOLSHEVIST FORCES OF RUSSIA: ADMIRAL KOLTCHAK (CENTRE) IN A GROUP OF ALLIED REPRESENTATIVES AT OMSK.

Admiral Koltchak is seen standing between the Comte de Martel, French High Commissioner in Siberia, and General Janin, Chief of the French Military Mission. To the left of the Comte de Martel is General Stepanoff, War Minister in the Koltchak Government. Also in the group are General Boves, of the British Army, and Admiral Tanaka, Head of the Japanese Mission. Many members of the Russian nobility are with Admiral Koltchak. His base of operations is far away at Vladivostok, and he is hampered, too, by inadequate transport and hospital arrangements. Britain is supplying most of his military stores. It was hoped that he would have been able to reach Archangel and take it over from our troops, but he recently suffered a reverse and was forced to retreat.

or hold, the same conception of world revolution, and the same plan for achieving it. "The art of working on the public mind by calumny, corruption, and terror," writes Mrs. Webster, "the seduction of the soldiery by women in the pay of the agitators, the fabrication of pretexts by which the people were made to carry out the designs of the leaders, the holding up or destruction of food supplies in order to drive them by hunger to violence, and at the same time the distribution of fiery liquor to inflame their passions, the hiring of foreign assassins to lead them on to bloodshed—all these diabolical methods employed by the Jacobins of France, indoctrinated by the Illuminati, have been repeated in Russia with terrible effect. Moreover, not only in its secret organisation but also in its outward manifestations, the Russian Revolution has obviously been inspired by the French—the September massacres in the prisons of Petrograd by those in the prisons of Paris, the drownings in the Black Sea by the *noyades de Nantes*, the desecration of the Kremlin by the desecration of Notre Dame; the very phraseology of the leaders is the same, the Bolshevik tirades against the *bourgeoisie* are copied almost verbatim from the diatribes of Robespierre." And, in France as in Russia, the object is the same—to concentrate all power, political and economic, in the hands of a small group of conspirators who will keep the masses in hopeless servitude to serve their own ends. Mrs. Webster shows how the poor folk of France were

Charles Walston, who thinks, however, that the modern journalist—especially if his sins are syndicated, so to speak—does more to pollute the waters of truthfulness than the politician. If it were possible to punish both the politician and the political journalist for suppressing the truth or suggesting falsehood—*e.g.*, in regard to Russian affairs—we should be on the high road to the Millennium. But that is impossible.

In "THE WHOLE ARMOUR OF MAN" (Grant Richards; 7s. 6d. net), by C. W. Saleeby, it is shown that science and common-sense can do far more than all the "ics" and "isms," howsoever applied in action, to improve the lot of mankind. Dr. Saleeby, as Lord Willoughby de Broke points out in his Introduction, has served his country well during the war. He proposed and prescribed the characteristic features of our steel helmet; he was the very first to advocate the erection of a Ministry of Health as a war measure; and he has latterly been responsible, as Chairman, for the Work of the National Birth-Rate Commission. The "great campaigns of peace," which he advocates with eugenic eloquence, ought—with one exception, I think—to be our chief preoccupation for the next five years. I except Prohibition, even when supported by the unexpected scientific arguments set forth in the Essay entitled "A Priceless Chemical." Yes, I shall insist on having my tankard of beer!

THE FIRST GOODWOOD SINCE THE WAR: RACES AND SPECTATORS.

PHOTOGRAPHS BY SPORT AND GENERAL, L.N.A., AND C.N.



THE FINISH OF THE STEWARDS' CUP: MR. H. CUNLIFFE-OWEN'S KING SOL WINNING, WITH MR. J. WHITE'S IRISH ELEGANCE SECOND, AND LORD GLANELY'S SCATWELL THIRD.



THE STABLE GIRL: KING SOL MET BY HIS "LAD," MISS MATHER, AFTER WINNING THE STEWARDS' CUP.



THE FINISH OF THE GOODWOOD CUP: MR. A. COX'S QUEEN'S SQUARE (S. DONOGHUE UP) WINNING.



THE OWNER OF THE GOODWOOD COURSE: THE DUKE OF RICHMOND.



AN EXCITING FINISH TO THE DRAYTON HANDICAP: SIR A. BAILEY'S WILSON BEATING CAPT. G. LODER'S LONDON PRIDE.



WITH A RING FOR HORSES RUNNING IN THE NEXT RACE: THE PADDOCK AT GOODWOOD.

After a suspension of five years owing to the war, the famous race meeting in the Duke of Richmond's park at Goodwood was held again this year on the picturesque hill course. The meeting opened on July 29, in somewhat dull weather, and the attendance was rather below the average, partly, perhaps, owing to the difficulties of travel nowadays, and partly because there were few house parties in the neighbourhood. The Duke of Richmond's



GOODWOOD: A GENERAL VIEW OF THE COURSE, WINNING POST, GRAND STAND, AND PADDOCK.

party at Goodwood House was mainly for men guests. The Stewards' Cup was won by Mr. H. Cunliffe-Owen's King Sol (W. Balding up). Mr. J. White's Irish Elegance (S. Donoghue up), came in second, within three-quarters of a length, in spite of having to concede 54 lb. in weight. The Goodwood Cup—traditionally the principal event—was won by Mr. A. Cox's Queen's Square (S. Donoghue up).

"ABOUT A NUMBER OF THINGS."

A Chat on Science by SIR RAY LANKESTER, K.C.B., F.R.S.



THE POND-SNAIL'S FLEA.

A TINY, colourless, worm-like little creature lives on the surface of the bodies of both the elongate and the flat-coiled pond-snails (*Lymnaeus* and *Planorbis*). When you watch a pond-snail crawling or floating in a small dish of water over which you bend closely (with, if you like, a watchmaker's magnifying-glass in your eye), you will see these minute worms, not more than one-sixth of an inch long, moving about on the snail's body, clinging to it by their hook-like bristles (Fig. 1) massed in paired bundles (Fig. 2). You can see them letting go their front hold so as to stretch the head and neck and take a more advanced grip, and draw the rest of the body forwards—somewhat in the same way as a looping caterpillar walks (Fig. 5). This little creature may well be called the pond-snail's "flea," as it infests the surface of the pond-snail's body much as fleas infest the higher animals—though it is not one of the six-legged "insects," as the flea is, but is one of the "bristle-footed" annulate worms, or *Chaetopoda*, similar in structure to the earth-worm and many kinds of fresh-water and marine worms.

I have found from four or five to as many as twenty of these little parasites on a single snail, and when I first made their acquaintance, many years ago while dissecting pond-snails, I determined to find out all I could about their life-history and structure, and year after year I kept an eye on them. They were called *Chaetogaster* (signifying "bristled belly") by their first discoverers. Two or three kinds (one nearly half an inch long) are known which live freely among the floating duck-weed of ponds, and are, as is also that frequenting the pond-snail, glass-like in their transparency, so that their digestive tract, brain, and nerves, blood-vessels and kidneys, muscles, etc., can be readily studied in living specimens with high powers of the microscope. The kind infesting the pond-snail was called *Chaetogaster Lymnaei* by a great naturalist, Von Baer.

Our Fig. 2 shows the little worm picked up from the snail's body with the aid of a fine glass tube and placed on a slip of glass beneath the microscope. It is shown as it appears when lying on its side, and is magnified about forty times (linear). The specimens drawn in Figs. 3 and 4 are somewhat flattened by the pressure of a thin cover glass; they are lying on the back, and are magnified only twenty times (linear). In all three specimens the bundles of bristles (projecting in Fig. 2 from the belly) are the most arresting feature. The mouth is at the front end of the worm (*m*), and one sees the large pharynx and crop and gut of the digestive tract showing through the transparent body wall. The pair of bristle-bundles nearest to the mouth are called the "head-bristles"; they are longer than those of the other "bundles"; are more numerous, being twelve in each bundle instead of eight; and are directed forward. The shape of a bristle with its double hook is shown in Fig. 1. The bristles are moved by muscles, and spread out or collect like the spokes of a fan, clinging to or letting go of the snail's skin as required. The bristle-bundles of the head are separated by a considerable gap from the first pair of bristle-bundles of the "body," and these succeed one another at short intervals (see Fig. 2 and Fig. 4). Each pair of bristle-bundles indicates a "ring" or "segment" of the worm's body; and the long gap between the head-bristle-bundles and the first of the body-bundles is due to the suppression of one or more pairs corresponding to intermediate "rings" or "segments." It will be seen in Figs. 2 and 4 that three pairs of well-grown bristle-bundles of the "body" region are succeeded by three or more pairs of quite small bristle-bundles, which are actually young and "sprouting." There is, in fact, a region of new growth following on the three well-grown bristle-bundles of the body region. We must remember that the little worm's body is like that of the earth-worm and other ringed or annulate worms—made up

of a series of successive "rings" or "segments" not clearly marked off from one another in *Chaetogaster*, but indicated by the pairs of bristle-bundles which succeed one another at intervals. Each pair, as in the earth-worm and the sea-worms, belongs to a distinct ring. Just as the pairs of bristle-bundles are repeated externally in successive rings, so are internal organs, such as the little kidneys (*nephridia*) and the blood-vessels and nerve-ganglia, repeated, each ring being thus a more or less exact repetition of those in front of and behind it.

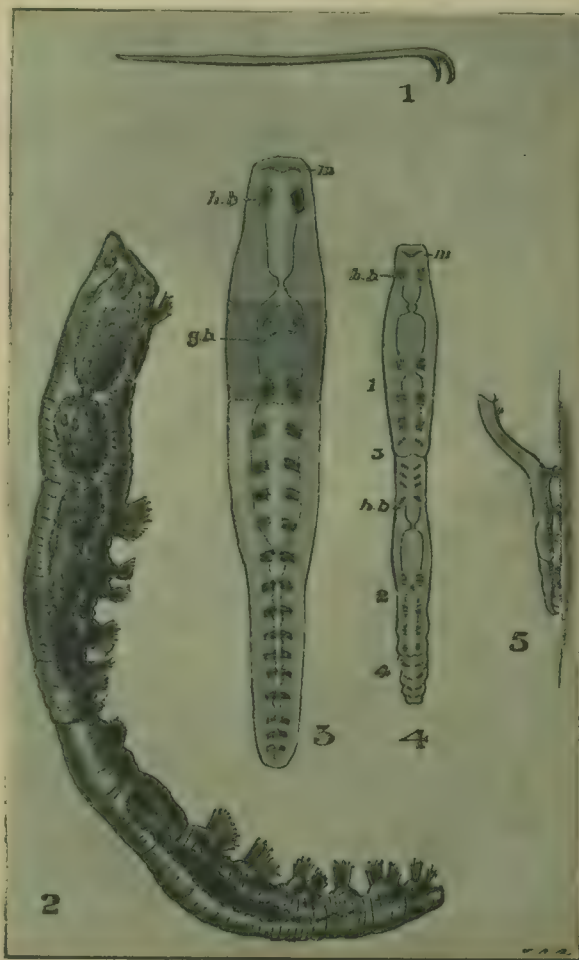
That repetition of segments as "units of structure" is the characteristic of the annulated animals. Often

calation" of new growth at definite points in the chain, and a breaking of the chain into two when a new "head" is sufficiently grown to act as such for the rings behind it. In Fig. 4 this history is marked out by the successive numbers 1, 3, 2, 4. Between 1 and 2, which were originally continuous, a new growth of rings or segments (labelled 3) has taken place. Also behind 2 a new growth (labelled 4) is proceeding. The head of 2 (indicated by the head-bristles *h b* and the long gap following them) is nearly complete, and then "fission" or division will occur just in front of *h b*. The front individual consisting of 1 and 3 is already far advanced in the growth of new rings between it and the head of the separating individual marked by the letters *h b*. In his own hinder region (labelled 4) this new individual is far advanced in the production of new rings and bristle-bundles for further separation as distinct individuals. This process of intercalation of new segments and subsequent fission is seen with special variations and laws as to the number of segments involved in other annulate worms—for instance, in the fresh-water *Nais* and the marine *Syllis*.

The chains of *Chaetogaster Lymnaei* grow and multiply by fission in this way during all the spring and summer. In early spring they are found even inside the pond-snail as well as on its surface. But, like all other animals, *Chaetogaster* has, we may be sure, another mode of multiplication—namely, by detaching from its body microscopic egg-cells which are fertilised by microscopic sperms. Such "eggs," in the case of other worms, are often laid in egg-capsules, from which they hatch as very minute microscopic young. For three years I searched for this phase of the life-history of *Chaetogaster* at all seasons, and at last I found, in the first week of one October, my elusive little acquaintance in his adult full-blown condition. At that date one or two of the "wormlets," so we may designate *Chaetogaster*, crawling on a freshly caught pond-snail, were seen by me to be larger by one-third or more than their companions. In ever-renewed hope of finding the pond-snail's wormlet in its adult condition, I examined one of these larger specimens under the microscope, and what I saw is sketched in Fig. 3. I had at last run down the full-grown adult stage of the *Chaetogaster Lymnaei*. Naturally enough, in accordance with its increase in size, the little worm had abandoned its prolific habit of intercalating new heads in its chain of segments and of breaking into two whenever a new head was complete. Now the worm consisted of a head region with a pair of large head-bristle-bundles, followed by sixteen pairs of body-bristle-bundles, set at regular intervals and indicating sixteen constituent rings or segments of the body, and other specimens of this construction were soon discovered. The bristles in all the bundles were larger and twice as numerous as those in the "fissiparous" or immature form. Moreover, as shown in Fig. 3, a thickening of the skin formed a girdle just over that part *g b* where the crop or stomach shows through it. This is known as the *clitellum* in other worms, and secretes a ring-like case in which the eggs are enclosed when laid.

The most important fact which I found was that in this, the adult or sexually ripe form, a new pair of bristle-bundles (*g b*) has made its appearance in the neck-like "gap" between the head-bristles and the earlier first pair of body-bristle-bundles. This indicates the development of a previously dormant region or segment in which the essential generative products—the egg-cells or "ova," and the sperms and the sacs connected with fertilisation, known in other worms as "spermathecae," or sperm-receptacles, were, I found, now present. On the surface four of the bristles on each side (*g b*) had grown of a new shape—they were short, blunt "clubs," instead of being double-hooks as that in Fig. 1. I subsequently found other specimens of the adult wormlet on my pond-snails; and also

(Continued on page 226.)



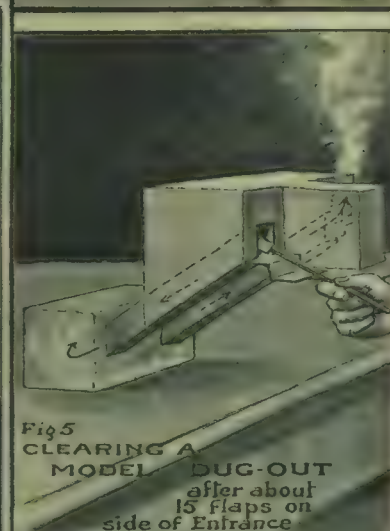
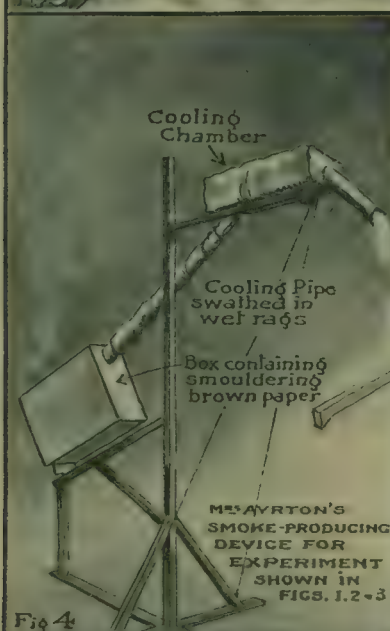
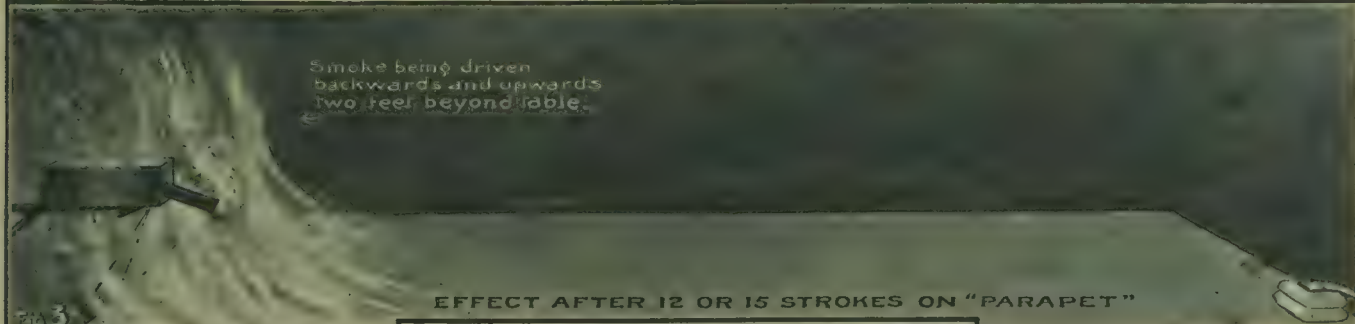
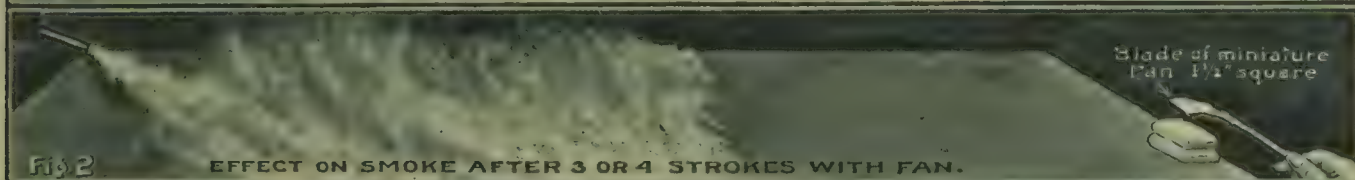
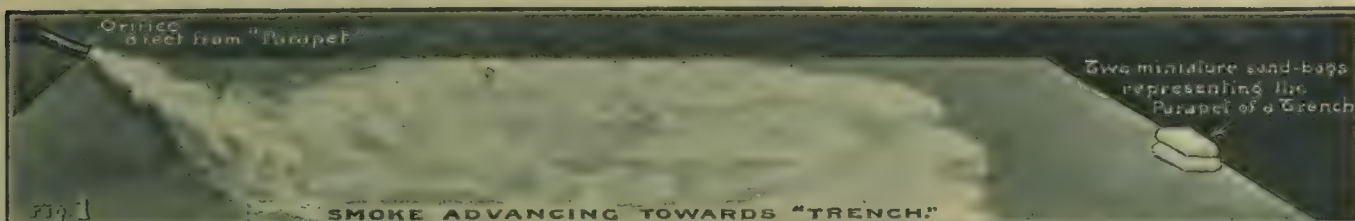
THE LITTLE WORM *CHAETOGASTER LYMNÆI*, WHICH LIVES (LIKE A FLEA) ON THE BODY OF THE POND-SNAILS *LYMNÆUS* AND *PLANORBIS*. IT IS ABOUT ONE-TENTH OF AN INCH LONG.

Fig. 1.—One of its "bristles" more highly magnified. Fig. 2.—The worm seen sideways and uncompressed. Fig. 3.—The adult sexual form: *m*,—mouth; *h.b.*,—head bristle-bundles; *g.b.*,—special genital bristles only seen in the adult. Fig. 4.—The immature form—being a chain of four incomplete individuals numbered 1, 3, 2, 4. Fig. 5.—A less-magnified view of the worm—showing how it crawls by reaching forward with the head and its hooked bristles.

the successive constituent rings or segments are over a hundred in number (150 in a big earth-worm), sometimes as few as twenty. Here in the little *Chaetogaster* very few segments are held together to make up an individual. It is obvious in both Fig. 2 and Fig. 4 that the chain of segments is about to break into two. A new head with head-bristles has formed at the point marked *h b* between 3 and 2 in Fig. 4. You can see the new head also in Fig. 2 following the dark constriction near the middle of the chain. The rule appears to be that, following after every three pairs of body-bristle-bundles indicating three segments of the body, a region of "new growth" is formed in which not only a new head with its head-bristles proceeds to take shape, but also new young bundles of bristles belonging to new rings which form between the new head and the third ring or body-bristle-bundle of the front or leading worm. You thus get continually going on an "inter-

THE AYRTON ANTI-GAS FANS: A WOMAN'S WAR INVENTION REVEALED.

DRAWN BY W. B. ROBINSON.



USED DURING THE WAR: MRS. AYRTON'S FANS FOR DRIVING OFF GAS—SHOWN IN ACTION AND IN MINIATURE.

It may not be generally known that the invention of a lady, Mrs. Ayrton, for repelling gas-attacks was largely used at the Front from the end of 1916 onwards. The device consists of a fan or beater, which was found effective not only in driving back clouds of poison-gas on the surface of the ground, but also in clearing gas from trenches and dug-outs. Mrs. Ayrton recently demonstrated her apparatus in miniature before the Royal Society, and acknowledged the help she had received in developing it from Captain Greenslade. She first showed a tiny fan (equal in size to three postage stamps), which

when beaten rapidly on what represented a trench-parapet, drove upwards and checked the flow of smoke from burning brown paper emitted from an orifice 8 ft. away. Another little fan of half the size was shown clearing a dug-out with a depth equivalent to a real one of 20 ft. The service fans, made of cane and canvas, measured 15 inches across and weighed less than 1 lb. By beating two of these fans alternately, it was found possible to drive away smoke or gas at a distance of 60 ft. and send it up over trees 10 or 12 ft. high. —[Drawing Copyrighted in the United States and Canada.]

THE PARISIAN COUNTERPART OF THE PARK: A MORNING SCENE IN THE BOIS DURING THE SUMMER SEASON.

FROM THE DRAWING BY J. SIMONT.



THE SOCIAL SIDE OF AFTER-WAR PARIS: LEISURE MOMENTS IN THE BOIS DE BOULOGNE—THE HOUR OF THE MORNING STROLL, RIDE, OR SIESTA.

If Paris resembles London in having certain discomforts and inconveniences to endure, such as the dearth of taxi-cabs and high prices, it is like London also in other and pleasanter ways. While London society flocks to the Park to while away its quieter hours in strolling or riding, or merely sitting and chatting under the trees, Parisians likewise repair to the Bois de Boulogne for similar purposes. Save for the unmistakably Parisian cut of some of the women's dresses, the scene here illustrated might well

have been drawn in the avenue that borders the Rhine. Among the men, there are as many British uniforms as French to be seen in the picture, for Paris just now is, of course, more cosmopolitan than ever, within the limits of the Alliance. There are, of course, still many details of negotiation with such Powers as Russia and Austria to be discussed, as well as the absorbing subject of—(Dress [?]—Drawing Copyrighted in the United States and Canada.)

THE WORLD OF FLIGHT

INTERNATIONAL AIR NAVIGATION.

By C. G. GREY,

Editor of "The Aeroplane."

THE International Commission which was appointed by the various Allied and Associated Powers to deal with aerial navigation, as a Sub-Commission of the Peace Commission, has now issued the text of the International Convention for the regulation of Internal Air Navigation. Apparently the issue of this document does not forthwith make it legal to fly aeroplanes all over the world; but it is, at any rate, a step in that direction. Before international flying becomes legal, the Convention has to be formally approved by the Supreme Council of the Peace Conference; but in the meantime it is possible for aviators to obtain special permission to fly from one country to another—as, for example, certain people have obtained permission to fly to Holland for the Dutch Aero Show at Amsterdam, which opened at the beginning of this month.

Certain points in the Convention are distinctly interesting. Possibly the most important of all is the very first article, by which contracting States recognise that every State has complete and exclusive sovereignty in the air space above its territory and territorial waters. It has long been held by a certain school of lawyers that the possession of a certain piece of land entailed the possession of the air above "up to heaven"; but there are excellent legal reasons for disputing this doctrine, and there has never been any direct legislation to decide the point. Now, however, the Air Convention distinctly supports the *usque ad coelum* doctrine so far as self-governing States are concerned; but it still remains to be decided whether the same doctrine holds good as regards private property. It hardly seems likely that it can do so, for the good and sufficient reason that, if the doctrine were upheld in a court of law, endless litigation would arise between landowners and aviators who happened to fly over their property at such an altitude as to make it impossible to read the registration numbers on their machines. In the case of sovereign States the matter is very different, for it would be obviously absurd if any aviator of any country were permitted to fly at will over every other country without let or hindrance. There would be no end of aerial smuggling if such liberty were permitted.

Even as it is, it is quite likely that many aircraft will fly over countries other than their own without asking permission. For example, an aeroplane flying from England direct to Holland might very well fly over a corner of Belgium without knowing it; and similarly a machine flying from France to Southern Germany might well fly over part of Switzerland in all ignorance and good faith. It will therefore follow that, when flying becomes really common, each State will have to maintain a fairly efficient frontier patrol in the air, so as to keep some sort of a check on the aircraft which fly over its own territory. So far as one can see, there is nothing in the Convention which entails any particular penalty on an aviator who merely flies across the frontier of a neighbouring State and back into his own country without landing. One imagines that aviators who do so will always take the risk of being shot down if they happen to fly over a prohibited area; but it is unlikely that odd cases of trespass of

this nature will develop into what used to be called "international incidents."

There is, however, a provision, as a kind of appendix to the Customs regulations, which says that "When an aircraft, to reach its destination, must fly over one or more contracting States, without prejudice to the right

landing, the Customs authorities shall examine the papers and the cargo, and take if need be the necessary steps to ensure the re-exportation of the craft and goods or the payment of the dues."

Thus, for example, if a machine were flying direct from England to Germany, it would have to make its signal at some point in France on entering and again on leaving, and all would be well. It is to be presumed that the regulation air routes, which will doubtless be fixed at a later date by the International Commission, will give the most direct line possible between important points in the various countries. Otherwise, naturally, an aviator flying a compass course between distant points would avoid going off his direct line merely for the sake of making a signal, and he would probably take the chance of getting into trouble with the authorities of the intermediate State over which he was passing if his engine happened to let him down on the way.

A very interesting clause in the regulations is Article 3, by which each contracting State has the right, for military reasons or in the interests of public safety, to prohibit the aircraft of other contracting States from flying over certain areas of its territory. These prohibited areas existed before the war in practically all European countries, and chiefly consisted either of actual fortified areas and dockyards, such as Chatham, Portsmouth, and so forth, and the fortified mountain zone between Austria and Italy, or important munition areas, such as Waltham Abbey in this country. The idea was presumably that foreign aircraft might come over these areas and take photographs which would be of great value to hostile air fleets in future wars. What makes this Third Article so particularly interesting is the proviso that each contracting State only has this right to prohibit the aircraft of other contracting States from passing over these areas on the condition that the same prohibitions apply to its own private aircraft. That is to say, the private aircraft of each State have no more privileges in this matter of prohibited area than have foreign privately owned aircraft.

Yet another interesting point is that no contracting State shall, except by a special and temporary authorisation, permit the flight above its territory of an aircraft which does not possess the nationality of a contracting State. This means in effect that, if a nation refuses to adhere to the International Convention its aircraft will practically be boycotted from all international flying. At the present moment it means definitely that no German, Austrian, Hungarian, or Turkish aircraft can fly over the territory of any of the Allies, no matter how peaceful the object may be. It is, however, understood that in due course our late enemies may be allowed to come into the Convention, but only when they have been also admitted to the League of Nations. Just how long it will be before

the Allies agree to accept Germany in the League of Nations is a very doubtful matter. Presumably it will be some years, and until that time German aircraft cannot fly over the territory of any of the nations which have agreed to the Convention.



TOO LATE FOR THE VICTORY MARCH: INDIAN OFFICERS LEAVING A HANDLEY PAGE AFTER A FLIGHT AT CRICKLEWOOD.

The other day a large body of Indian troops, part of the Contingent which was prevented by influenza from arriving in time for the Victory March, visited the Handley-Page aerodrome at Cricklewood. Many of the officers were taken for flights. The King arranged to review the Indian troops at Buckingham Palace on Aug. 2.

Photograph by C.N.

of sovereignty of each of the contracting States, two cases must be distinguished—

"(1) If the aircraft neither sets down nor takes up passengers or goods, it is bound only to keep to the normal air route, and to make itself known by



A NEW BRITISH ARMoured AND CAMOUFLAGED AEROPLANE: A 1919 SOPWITH SALAMANDER FOR GROUND TARGET WORK.

This machine was designed for the use of a pair of Vickers machine-guns for "trench-strafting" and ground target work. It is fitted with a 200-h.p. Bentley Rotary engine. The armour plating is painted in chocolate brown. On the wings is a "forked-lightning" camouflage design to render it comparatively invisible from above.

signals when passing over points designated for such purposes.

"(2) In other cases it shall be bound to land at a Customs aerodrome, and the name of such aerodrome shall be entered in the log-book before departure. On

BRITISH SEAPLANE v. BOLSHEVIST ARMoured TRAIN: IN RUSSIA.

DRAWN BY E. L. FORD.



UP-TO-DATE METHODS OF FIGHTING IN NORTHERN RUSSIA: A BOLSHEVIST ARMoured TRAIN ADVANCING AND A BRITISH SEAPLANE
ATTACKING THE LINE.

"Every day at sunset," writes the correspondent who sends us this drawing, "the above incident occurs on the Madniga Gora Railway. The trestle bridge of crossed logs replaces one that was recently destroyed by our aeroplanes. One of the latter, a seaplane, can be seen bombing the line, while the observer is machine-gunning the train." The general military situation in Northern Russia was the subject of a speech by the Secretary for War in the House of Commons on July 29. After mentioning the decision to withdraw

the British forces from Archangel and Murmansk, Mr. Churchill said: "We have the greatest possible confidence in our commanders on the spot. They will have every support that is necessary from here. . . . The General Staff are of opinion that there is no cause for alarm in regard to the safety of the British troops, but they ask that entire latitude shall be given to the commanders; . . . that if needed, reinforcements will be sent to them."—[Drawing Copyrighted in the United States and Canada.]

ARMENIAN REFUGEES IN CAIRO: REMINISCENCES OF EGYPTIAN UNREST.



IN CHARGE OF BRITISH TROOPS DURING THE UNREST IN EGYPT: ESKEBIEH POLICE STATION, ONE OF THE PRINCIPAL POLICE STATIONS IN CAIRO.



CAIRO TRAMS GUARDED BY BRITISH TROOPS: A GUARD RECEIVING MID-DAY RATIONS OF TEA, BREAD, AND CHEESE.



WHERE AN ARMENIAN WHO TOOK REFUGE THERE WAS MURDERED: A CHEMIST'S SHOP WRECKED IN OPERA SQUARE, CAIRO.



WAITING TO BE TRANSFERRED TO THE ARMENIAN CAMP AT HELIOPOLIS, NEAR CAIRO, PROVIDED BY THE BRITISH MILITARY AUTHORITIES: A GROUP OF ARMENIANS IN THE GROUNDS OF THE ARMENIAN ORTHODOX SCHOOLS AT BOULAK.

Now that tranquility has been restored in Egypt once more, and the situation is practically normal, it is interesting to turn to the photographs published above, which were taken in the recent disturbances in that country, to gain some conception of what events were like in Cairo during the period of unrest. For some time Cairo was practically under military occupation, or, at any rate, under such military occupation as was considered necessary by the High Commissioner, General Allenby, for the protection of the inhabitants,

European, African, and Asiatic. A camp for Armenian refugees was established at Heliopolis. A great feature of the disturbances in Egypt was the hostility of the Egyptian populace to the Armenians, and to Europeans of other than British nationality. Accordingly special protective measures had to be undertaken to secure the Armenians in Cairo and other places, where many of them lived in the poorer quarters among the Egyptians, from serious injury and loss of life.

THE MACKENSEN TUNNEL: A GERMAN INSCRIPTION; A FRENCH GLOSS.



The history of the last two years of the war in the Balkans may be said to be epitomised in the two inscriptions over the entrance to the Mackensen Tunnel, on the road from Demir Kapou between Uskub and Salonika. The tunnel was inaugurated in 1916 by Field-Marshal von Mackensen. The German inscription then placed above the entrance reads: "William II., German Emperor, King of Prussia, ordered his troops to construct this route, 1916." Below it a later French inscription states with brief irony: "General Franchet d'Esperey, Commander-in-Chief of the Allied Armies of the East, ordered his

troops to drive out the Boches, 1918." It was in 1915 that the Germans supporting the Bulgarians decided to construct the tunnel on a route parallel to the railway connecting Uskub with Salonika, via Veles. It was finished in the following year, and, after being opened by Mackensen himself, became the chief artery of communication with half the enemy front in Macedonia. In September 1918 the crushing advance of the Allies enabled them to cut off the retreat of the enemy's whole left wing, and the famous tunnel fell into their hands.

["The Pond-Snail's Flea"—Continued from page 216.]

found in a beautiful snake-like worm (*Nais serpentina*) an inch long, coiling round dead twigs in a neighbouring pond, that the same change from a fissiparous or dividing young or larval form to a non-dividing adult sexual form occurs, and that as in *Chaetogaster*, so in *Nais*, a new segment grows into place in the neck region when the adult stage is attained, that in it the ova and sperms, etc., develop, and that this segment has peculiar short club-shaped bristles not present in the immature fissiparous worm. These bristles I called the "genital setae." So it was established that in these little fresh-water annelids or annulose worms there is a larval fissiparous form which gives rise, after multiplying for a season by fission, to an adult sexual form differing considerably from the larva especially in size, the absence of fission, and the presence of a hitherto suppressed genital segment carrying the reproductive organs and peculiar club-shaped genital setae.

Now that I have said as much as I think the reader can tolerate about the pond-snail's flea or wormlet, I wish to emphasise the fact that one can readily observe so much that is remarkable and of wide significance in a common pond-snail. In the three articles which I have devoted to it I have merely sketched some of the more obvious of these things which anyone can readily verify, if he will venture so far as to keep three or four pond-snails in a basin of water. I have yet to write of a very curious and important matter concerning pond-snails—namely, their relation to that terrible pest of the farmer, "sheep-rot." There are two additions which I wish to make to recent articles of mine which want of space curtailed. Firstly, as to the colour of the blood of lower animals. Those which do not possess the red oxygen-carrying haemoglobin—including most of the mollusca and the insects, spiders, scorpions, and crustacea (crabs and lobsters and shrimps)—have often a pale-blue oxygen-carrying substance in it instead. It is called Hæmocyanin, and is indigo-blue when carrying oxygen, and

nearly colourless when deoxidised. It gives no detached absorption bands in the spectrum of light passed through it. Further, in some marine worms (the *Chlorhaemians*) the blood is green instead of red. This is due to a substance which I found and called chlorocruorin. It carries oxygen, and gives two peculiar absorption bands. Since red, blue, and green substances exist in the blood of different animals and act as oxygen-carriers, it is not improbable that special colourless oxygen-carrying substances exist in the blood and tissues of animals which are colourless. A means of detecting and isolating

["The Application of Art to War"—Continued from page 218.]

Another instance among many was the raising of a shelled Red Cross camp, from which we had been driven in the great offensive of 1918, only 8000 yards from the Amiens front; so ingeniously done as to appear from above just as we had left it.

The main difficulty of any leader is to hide his reserves, who otherwise are demoralised and thinned by aerial attack. The covering-in of great areas was a provision against this difficulty. In war, what is not discovered is the last thing to suffer, and the first essential to surprise, by which alone effective results are obtained. Of our own camouflage, apart from armoured observation posts, the smaller paraphernalia, and smoke-screens—which, by the way, made the Zeebrugge raid a possibility—the most effective in its small way was composed of threaded fishing-net. This, when stretched flat above guns, and threaded very thinly toward the edges, covered up the gun, and made no appreciable shadow on the ground itself. That illustrated the complete elimination of shadow. Unfortunately, the Germans took quantities of this material in their rush, so it is no longer a secret.

But camouflage came late, and fared badly with us. And in the

Commander-in-Chief's clearing-up report, in which mention is made of every possible activity and aid, not a word is said of the camoufleur. And no wonder. The application of art to war is obviously an artist's job. Good music could hardly be expected from an orchestra led by a deaf mute. Perhaps another time we shall have grown wiser.

Messrs. S. Smith and Sons, Ltd., have acquired the sole selling rights for the world of the well-known "K.L.G." sparking plugs, which were very largely used in aircraft engines during the war. Both the Vickers-Vimy machine which accomplished the Atlantic flight and the Sopwith which so narrowly missed the premier honour of the crossing were fitted with these plugs.



TROOPS WHO WERE TO HAVE FORMED PART OF THE PEACE PROCESSION: INDIAN CAVALRY ON THE MARCH. The Indian troops did not take part in the Victory procession, owing to the fact that their arrival was unavoidably delayed. The troops, who include all castes, were reviewed by the King last week in Buckingham Palace Gardens. The parade was commanded by Brig-General E. W. Costello, V.C.—[Photograph by C.N.]

such substances has yet to be discovered. The second omission which I wish to rectify is as to the size of some extinct elephants. The humerus or upper arm-bone of an average-sized Indian elephant is about three feet long, and one of that size was figured in my article on the "Biggest Beast." But we have in the Natural History Museum a humerus of the extinct *Elephas antiquus*, recently dug up at Chatham, which is four feet three inches long. The elephant with a humerus of this size measured fifteen feet in height at the shoulder and is the largest terrestrial mammal on record. It is probable that exceptional specimens of the African elephant grow to be nearly as large, but there is no trustworthy record of an Indian elephant nor of a Mammoth (*E. primigenius*) approaching that stature.

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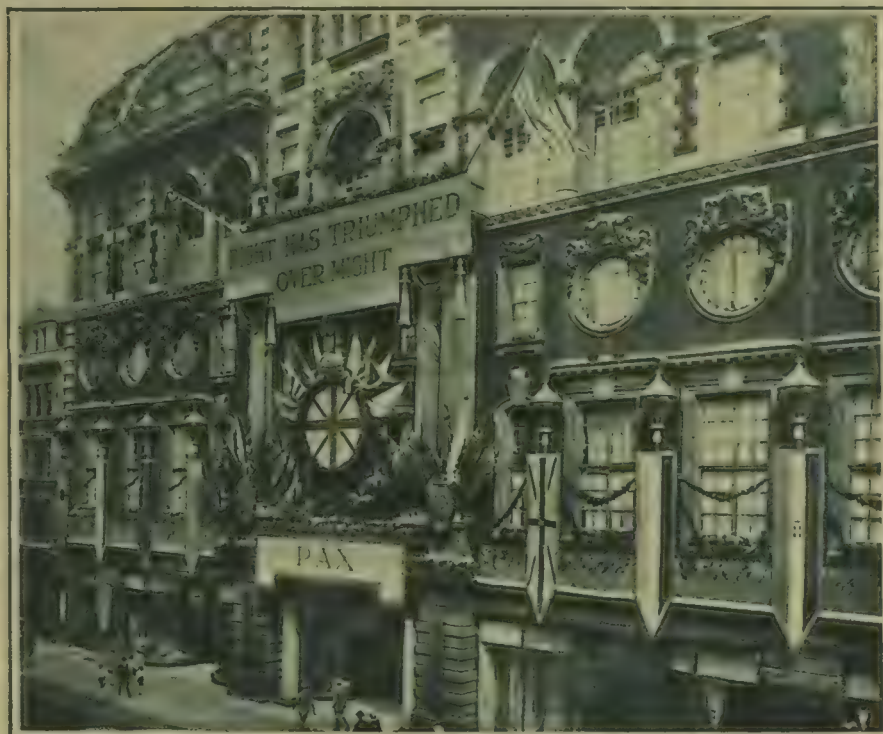
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WARING & GILLOW'S PREMISES DURING PEACE WEEK



The Peace Celebrations in London

"The Times," commenting on the Decorations, said:—

AS befitted one of London's principal drapery shopping centres, Oxford Street presented a blaze of colour in flags, great and small, bunting and flowers. The strongest impressions were of the gold which dominated the scheme of decoration at Messrs. Waring & Gillow.

Over the main door was emblazoned in golden letters on a white background the word "PAX." On either side were panels bearing the colours of the victorious nations, and topped with antique gold lamps. Above, a Union Jack within a wreath of laurel, the circular windows of the second floor being outlined with electric lights. Flanking the national flag, too, were inscriptions recording some of the chief battles of the war, and over all the golden statement—

"Right has triumphed over Might."

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LADIES' NEWS.

UP to the long-drawn-out end of the past unconventional season the King and Queen have fulfilled a strenuous series of engagements. His Majesty's last Investiture was on Saturday, and the River Pageant on Monday was the last public engagement. For the Twelfth, which assumes more importance than at any time since 1913, the King and Queen, Prince Albert, Princess Mary, Prince Henry, and Prince George propose to be at Balmoral. What the shooting will be like in the North is not known. There seems to have been a lot of disease among the grouse. Doubtless, however, whatever it is like, it will be more enjoyed than the very best used to be before war had taught us to be less exacting. Women had begun to come to the fore in grouse-shooting before the war, and will certainly now more than ever take their place as comrades of men by moor and river and loch and hill. There are many women who have stalked and grassed fine stags; the Marchioness Douro is one, and Lady Gilmour of Montrave was an ardent stalker, as was the Marchioness of Breadalbane and the late Lady Tweedmouth. Those who shoot over dogs, and have no kennels in the North, are flogging badly at the partial muzzling order, which prevents them from moving their pointers and setters without the penalty of six months' quarantine.

The Command Performance at the Coliseum was a lesson in what can be done in beautiful illumination and decoration. It was wonderfully effective, and originality was well to the fore. The cube-shaped shades to the lights were quite new, and the arrangement of colour. I am told that the Queen was delighted with it all, and specially admired the soft pearl-grey drop-curtain, with its curious decorations in pink and black and other hues. Undoubtedly the King and Queen and Princess Victoria enjoyed many hearty laughs; the humour appealed to them more than to the young Princes and Princess Mary. It may be, however, that the young people had seen most of the performances before.

Writing of illuminations reminds me that Harrods have a very large variety of original and beautiful lampshades. Since we can once more enjoy a sufficiency of light, and can make use of it for decorative purpose, lampshades have great interest, for it is through their agency that we can obtain the best effects and organise the most successful schemes either for dinner-table or room. For the guidance of those unable to visit their great establish-



A GARDEN-PARTY FROCK.

Rose-petal-pink Georgette embroidered in delft blue makes a dainty summer toilette.

ment in Knightsbridge, Harrods have published a three-fold sheet devoted to illustrations and prices of lampshades and candle-screens. It is an example of the thoroughness with which this celebrated firm caters for its customers that over fifty shades are shown in this sheet—and remarkably well shown too. Choice is not restricted, and in every instance price and size are given.

The autumn fashion campaign is not yet opened; so much of its purpose as is yet disclosed points to wide hips converging to skirts very narrow at the ankles. Also to bodices draped inward to the waist—the forerunners, without doubt, of a return to the mid-Victorian slenderness of that portion of the female form divine. Possibly a wider knowledge of physiology will prevent the wasp-waist from becoming the vogue. But where fashion is concerned, who shall say? When smartness swaggers in at the door, reason flies out of the window. A great designer of dress says the new outline will be very graceful, and will tend to improve women's walk. The free stride possible with the short and fairly wide skirt will no longer be encouraged. That women war-workers will ever again bear unnecessarily restricted movements he believes probable. Not at first, he says; but what is smart will soon attract them. Perhaps he is right; there is no doubt that, whatever autocrats may be put out of court, women of fashion will still bow to the Dame's decrees.

Although Cowes Week has not this year resumed its brilliance, there has been a regatta, and many people are cruising in the Solent. Lord Tredegar has his yacht, which did such good war work, in commission once again, and has friends aboard. Lord Dunraven is cruising; and Lord and Lady Ormonde are entertaining, and often out on the water. The thing that is required for comfort for all holiday pursuits, particularly for yachting and motoring, is a thoroughly protective coat. There is a chorus of praise for Burberry's Tielocken, which is, by clever contrivance, made to doubly safeguard vulnerable parts of our bodies, and fastens with a strap and buckle. The coat can thus be worn over any thickness of under-garment. When cruising, that thickness, to ensure warmth and comfort, needs to be considerable.

The engagement of Commander the Hon. Erskine Nicolson and Miss Katharine Lopes is an interesting one. He is the grandson, on his mother's side, of Harriot Marchioness of Dufferin and Ava, a lady of the North of Ireland, who has given splendid service to her country.

(Continued overleaf.)



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Lady Carnock, Commander Erskine Nicolson's mother, is one of her daughters. Miss Katharine Lopes is, on her mother's (Lady Albertha Lopes) side a great-granddaughter of another Ulster notability, the first Duke of Abercorn. Lord Carnock's career as a distinguished diplomatist is well known. The marriage of his youngest son to the only daughter of Lord and Lady Sackville made quite a stir before the war.



ENGAGED TO MAJOR GAVIN L. WILSON, M.C.; MISS C. L. RINTOUL GEORGE.

The engagement of Miss C. L. Rintoul George, only daughter of Mr. A. W. George, M.D., and Mrs. George, of Satter House, Shootup Hill, to Major Gavin L. Wilson, M.C., R.F.A., son of the late Mr. and Mrs. Wilson, of Duffell, Linlithgow, has been announced.—[Photograph by Bassano.]

looked very sunny and charming as she joined the tall, soldierly bridegroom at the entrance to the chancel Locheil—to whose name there is always a spice of romance—was (with his brother-in-law the Marquess of Graham) one of the ushers. Queen Alexandra sent the bride a handsome amethyst and diamond pendant. Her Majesty gave to the London Hospital (of which Lord Knutsford is Chairman) an installation of Pinsen Light for the treatment of lupus. It has proved an

inestimable benefit, and her Majesty has always been greatly interested in it, and has taken her sister the Empress Marie Feodorovna to see it working.

Goodwood was shorn of some of its glory: there were no members of our sex in the Duke of Richmond's house-party; the weather, though fine, was cold and dull; and no royalty were present. The King's last visit to the beautiful Sussex course was made in 1913, when there was a brilliant assemblage. The 1914 meeting is memorable because each day the war grew dramatically nearer. The King's visit was postponed from day to day, and never eventuated. On the evening of Cup Day the house-parties in the neighbourhood were shorn of their young men, and on the Friday there was not a soldier to be seen at the meeting. The Duke has lost one much-loved son; his grandson was long a prisoner of war, and things can never be the same again. His Grace, like all his line, is brave and British; and, if all goes well, the Goodwood of 1920 will revive all the glories of Goodwood—and perhaps add to them.

It would be thought quite impossible that in these advanced days, when all right-thinking people are so intent on securing the future of our British race in a way befitting its glorious records, that a case of such revolting cruelty as that of baby-farming is within the bounds of possibility. Infant welfare should be the first care of every citizen. The Countess of Donoughmore, Mrs. R. H. H. Cust, Mrs. K. Thompson, and Mrs. Blanche Phillips are engaged in the most excellent work of establishing a non-sectarian foster-home for the shelter and care of the first babies of unmarried mothers.

This home is to be run on common-sense lines by sensible, understanding women. A suitable house at Hampstead and a staff are ready, and now £2000 is needed to start the home. It is a small sum to start a great work. These girl-mothers are

driven to desperation to have their babies taken from them, and so free them to earn a living for them and for themselves. They can afford very little, and so the poor, helpless, innocent little scraps of humanity are exposed to such horrors as make every woman's blood boil to read about. The control of the Home will be in the hands of a duly qualified committee, and audited balance-sheets of income and expenditure will be sent to subscribers at the end of each financial year. Think of the agony of mind saved to these desperate mothers, and of the betterment of their chances of taking their place again among others, for having their babies cared for and by having free access to them. Think, too, of the chance for a happy, healthy life to the innocent infant. It is a splendid opportunity of making the world a bit better than we found it. Donations, subscriptions, or endowments to cottages may be sent to Mrs. R. Cust, Hon. Sec., 7, Park Hill Road, N.W.3.—E. A. L.



A WRITER OF ROMANTIC FICTION: "MISS MARJORIE BOWEN."

Miss Marjorie Bowen, the well-known novelist is, in private life, the wife of Capt. A. L. Long, 4th London Regiment. "Marjorie Bowen" is only a "nom-de-guerre." She is the daughter of Mr. and Mrs. Vere Douglas Campbell. Mrs. Long has written over twenty-two books.—[Photograph by Swaine.]



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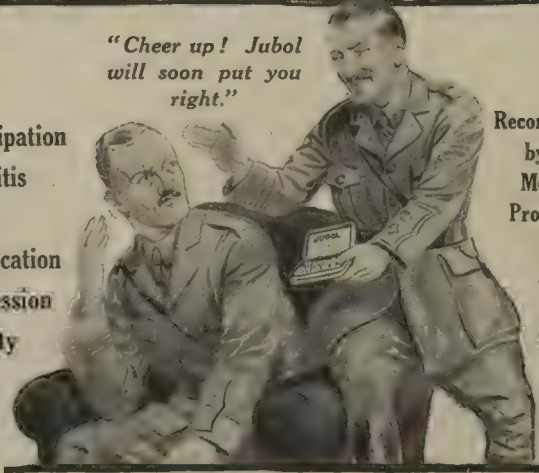
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SCIENCE JOTTINGS.

THE ELEMENTARY TEACHING OF SCIENCE.

MOST of us nowadays are convinced that the Germans were better prepared for war than ourselves because the teaching of natural science was more widely diffused among them. Without stopping to ascertain that this really was the case, we go on, after our manner, to abuse our own time-honoured school curriculum, and to declare that it is absurd to continue to teach boys Greek, Latin, and simple mathematics, when they might be learning something useful like physics, chemistry, and the study of what used to be called "animated nature." From this to clamour for the abolition of classics and mathematics in our Public Schools, and the substitution of the "something useful," is a step soon taken; and the more thoroughgoing enthusiasts go still further, and ask that the "something useful" shall also be taught in the State-supported schools, so that the children of the poor may start with equal opportunity in the race with the children of the rich. When this is done, we are assured that the application of science to industry will be as common as flies in summer, and that every factory in the land will be able to compete on equal terms with those in Germany.

This may be so; but in the meantime how is the teaching to be brought about? In teaching, as in most other things, it is as well to begin at the beginning; and it stands to reason that children are hardly likely to go far in the study of sciences like heat, light, and electricity without some knowledge of the elementary facts on which they are based. But when we come to inquire what facts are elementary and what are not, we find ourselves in a difficulty. Thanks to the discoveries of the last twenty years, the conceptions on which these three sciences were founded in our grandfathers' time have been turned upside down. We have not the slightest idea as to what electricity is; the undulatory theory of light is tottering; and that of heat is so mixed up with the movement of electrons that its study can hardly be separated from that of those still hypothetical

bodies. How, then, are we to teach children, with their inborn habit of perpetually asking "Why?" what we do not ourselves know with any certainty?

Yet another difficulty arises from the necessity of mathematics. Science is every day becoming more and more international, and equations are practically the only language in which an English writer on science can express himself with a chance of being understood by French, Germans, Italians, and Russians; while the same argument

boy ever grasps the idea that $(a+b)^2 = a^2 + 2ab + b^2$ until he reaches the part of Euclid which shows him that the square of a right-angled figure contains, besides the squares of the sides, twice the rectangle which those sides contain. This comes in due course to the Public School boy between the ages, say, of twelve and sixteen. How is it to be crowded into the instruction of the Board School boy at a much more tender age, along with the other scraps of information with which he is still to be crammed?

Another obstacle to be overcome only by time is the use in all science, elementary or advanced, of Greek and Latin terms. This may be partly due to the fact that up to the beginning of the nineteenth century most men of science had to put their discoveries in Latin, which during the Middle Ages was the only medium of learning in the Christian world. But a yet more cogent reason is that Greek is still the most precise and expressive means of translating human thought into words, and hence every old and new discovery in science is described most easily and intelligibly in words derived from the Greek. He who has acquired even a small vocabulary of Greek by the study of classical authors can make a shift to understand these without much effort; but to him who has not, the task of learning all their meanings by heart must be like that of Sisyphus. Yet what chance has one of keeping abreast of the constant increase of new facts when one has only a very imperfect knowledge of the language in which these facts are described?

It follows from this that our old system of education was neither so senseless nor so useless as some of us are now inclined to think, and that the study of classics and mathematics may even form the best foundation for the study of nature. The mistake, if any, has been in regarding them as a substitute for it. The preparation of the ground doubtless takes up much valuable time, as it does in the building of a house; but that should not lead us into the error of putting our superstructure on a shifting base. To avoid this, in the present instance, we must, in fact, allot a longer period to education. Can we afford this?



OUR NEW FIELD-MARSHAL: MARSHAL FOCH INSPECTING THE 1st IRISH GUARDS.

The King made Marshal Foch a Field-Marshal of the British Army on the same day on which he became a Freeman of the City. Marshal Foch is the only foreigner who holds this honorary rank in the British Army, with the exception of the Emperor of Japan.—[Photograph by S. and G.]

applies to a writer in any of the four last-named languages. But the acquisition of the most elementary knowledge of mathematics demands time, and it is doubtful whether our English youth have that natural bent towards calculation and numeration to be found to perfection in the Near East, or the love of formulas which distinguishes the German-speaking nations. Hence any attempt to give the children of what used to be called the lower—now the upper—classes an insight into this new sort of shorthand takes several years. It is doubtful, for instance, whether the ordinary

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THE CHRONICLE OF THE CAR.

A Coming Change
in Taxation.

During the recent debate on the Finance Bill, Mr. Joynson Hicks raised the question of motor taxation and the roads, and asked for an assurance that the motor and petrol taxes would once again be allocated to their first purpose of road maintenance and improvement. He not only received the desired assurance from the Chancellor of the Exchequer, but extracted the interesting announcement that Mr. Chamberlain has it in contemplation to alter the existing basis of taxation. The present system of car-taxation, it would appear, is not likely to be interfered with, excepting, perhaps, that the archaic formula for ascertaining taxable horse-power—which is as effective for ascertaining horse power as Mrs. Partington's mop for holding back the tide—may be discarded in favour of something more workable and fair. It is the motor spirit tax with which Mr. Chamberlain seems to be most concerned, and for which he desires to find a substitute which will bring in an equal amount of money for the use of the Road Board or that department of the Ministry of Ways and Communications which will succeed it.

So far as concerns the horse-power tax, it is really time something was devised to take the place of the present formula. As I have said,

it gives no approximation whatever to actual horse-power. What it does is to penalise cars of the American type, having big engines which run at a comparatively slow revolution rate and have a small

power output, and to favour the small-bore, long stroke motor which develops often twice the power of the other, and, in consequence of its small bore, pays half or even less than half the tax.

Suggestions
Wanted.

The Chancellor has asked for suggestions for an amended basis of taxation. As to this

matter of car taxation, it is not easy to devise a scheme which would be fair all round. It has been suggested that weight would be the best basis, because it bears some sort of relation to road-wear. I do not agree, because on a given weight of car we have a wide diversity of engine power, and therefore of speed. Obviously, the 25-h.p. car weighing 35 cwt. must cause less damage to the roads than the car of similar weight carrying under its bonnet an engine rated at 50-h.p., all other things being equal. Unfortunately, all other things are not equal, and it may often happen that the more powerful car will do less actual damage because of the smoothness of its transmission—or, possibly, because it is driven well within itself, while the other is all out most of the time. It seems to me that if we are to have a car tax at all—and I cannot see the taxes being compounded so as to make a single levy—the best basis would be that of a maker's bench-test certificate, which should be accepted as correct for a type. Every motor is subjected to careful power-tests before it leaves the works, and it would be perfectly easy for the maker to average his tests and give



A HISTORIC WORKSHOP: THE GARRET OF JAMES WATT.

James Watt, the famous engineer, worked in this garret at Heathfield Hall a hundred years ago. It remains exactly as he left it after using it for experimental work. The centenary of his death is to be marked by a Commemoration, to be held in Birmingham in mid-September.

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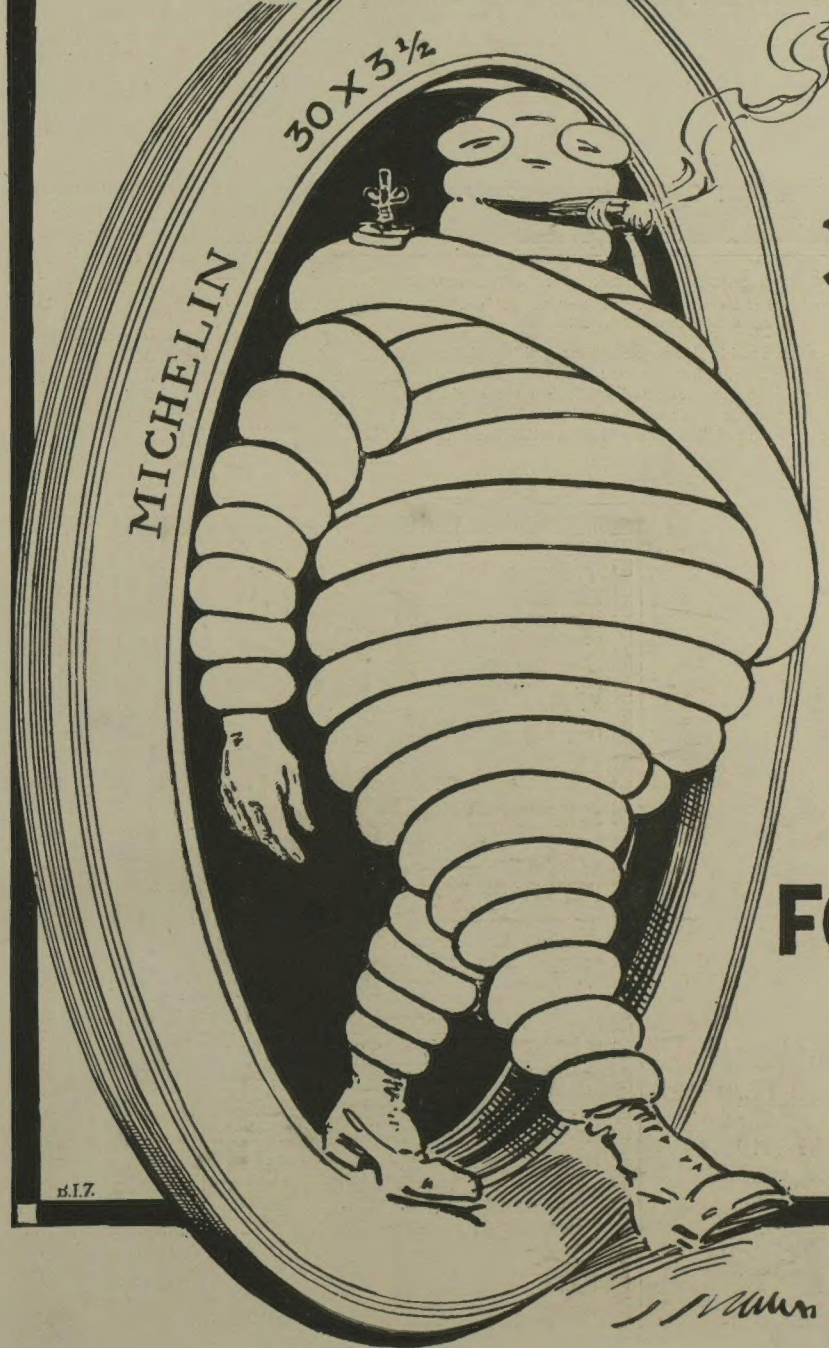
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(Continued.)

a certificate to the purchaser to the effect that the average power developed by the type was *X* horse-power. There is an objection which might be raised, which is that this would leave out the weight factor. The answer is that you cannot have it all ways without making the scheme impossible, and that, in any case, the present system takes no account of weight. There is still another objection which might be noted with regard to certain of the cheapest and most popular cars of American type. The prices at which they are sold do not admit of tests which cost money. The maker has a motor designed of certain dimensions, and lays it down that it ought to develop a certain amount of power. Many times it does not reach its rating; but it is big enough to give ample power, so there is no particular need to put it through a power-test—it goes straight from the engine-erecting shop into the chassis, and no such thing as a maker's certificate is available. Still, if the British law requires such a certificate, it is up to the foreign manufacturer to provide it. On the whole, I cannot help thinking that the method I suggest has a lot to recommend it. It may not be ideal, but until someone puts forward a more workable suggestion I shall consider it comes as near to a solution of an admitted difficulty as any.

A Tyre Tax?

The matter of finding a substitute for the motor-spirit tax, which is what the Chancellor seems most to desire, is more difficult. The main objection to the present tax is, Mr. Chamberlain tells us, that it is costly to collect, and a very inconvenient one, because it depends on the use of the article which is taxed. I should have thought that this objection was common to every dutiable article of everyday use. Tobacco and spirits are two cases in point, in which

the amount collected depends upon the use of the article. The case of motor-spirit, however, is complicated by the exemptions which have been granted to various privileged sections of the community, with all the machinery of "draw-backs" and other disadvantages.

For my own part, I am very much of opinion that the most equitable method of collecting a tax is to impose a

tax, would also be called upon to contribute more in tyre-tax, which is at least fair in the case of a tax which is primarily levied for the maintenance of the roads. The lighter and under-powered vehicle would obviously come off better, as it should when we regard the fact that it causes less damage to the roads. It has been suggested that there should be a dual tax on tyres and on motor-spirit. That is, to my mind, complication

run mad—nor do I see how it would be any fairer than, or even as fair as, the combination of power and tyre taxes I have advocated. Of course, all the money needed might be raised through a tyre tax; but I think we can take it for granted that there is not the slightest probability that the vehicle tax in some shape or form will be abandoned. Therefore, we shall do well to look for a workable substitute for the present out of date method of ascertaining taxable power, and also for an alternative to the petrol tax which the Chancellor is desirous of discovering. If anyone can better the suggestions I have set forth, I shall be more than pleased to hear their views.

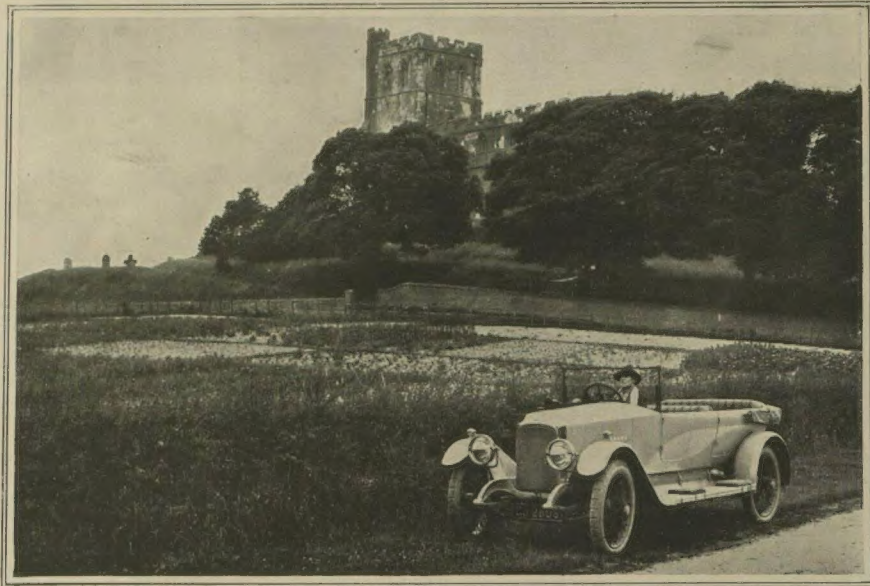
W. W.

Mr. F. Hedges Butler, the founder of the Royal Aero Club of the United Kingdom, has received the following letter from the Hon. Sir Sidney Greville, Comptroller to His Royal Highness the Prince of Wales—

York House, St. James's Palace, S.W. July 29, 1919.

DEAR MR. HEDGES BUTLER.—With further reference to my letter of the 6th ult mo, with reference to the request that the Prince of Wales would become the Vice-Patron of The Royal Aero Club, I have taken an opportunity of submitting this to his Royal Highness, who desires me to inform you that he will have much pleasure in complying with the request.

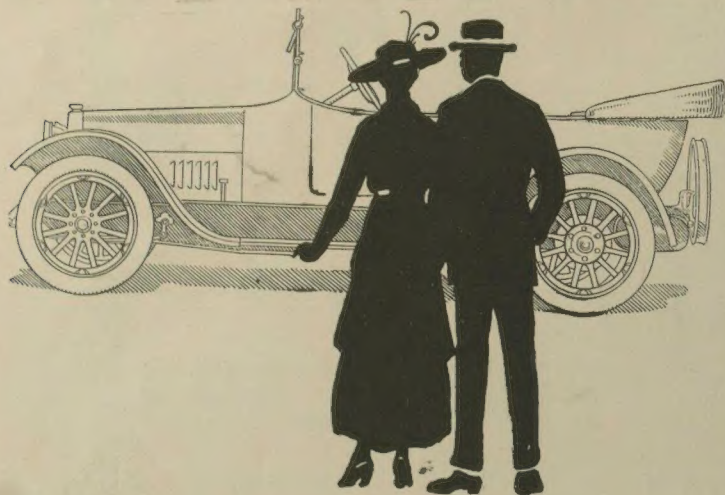
Believe me, Yours very truly, SIDNEY GREVILLE, Comptroller.



THE TOURING SEASON: A CHURCH IN BEDFORDSHIRE.

The handsome car seen in our photograph is one of the new 25-h.p. "Kington" Vauxhall cars. The church is that of the village of Edlesborough, Bedfordshire.

mulct on tyres, and to give no exemptions or differentiations whatsoever. True, it has the same disadvantage of being leviable only on the used article, though I am afraid I cannot quite see how this can be avoided. The tyre tax has the advantage of being a direct tax on mileage and road damage, which the motor-spirit tax is not. The heavy, fast car, which would pay more by way of horse-power



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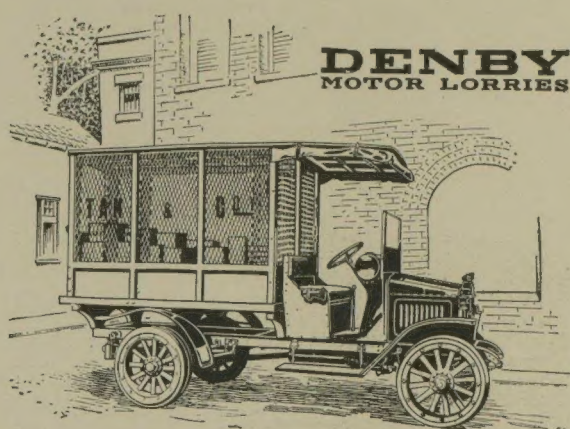
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When knights were bold,
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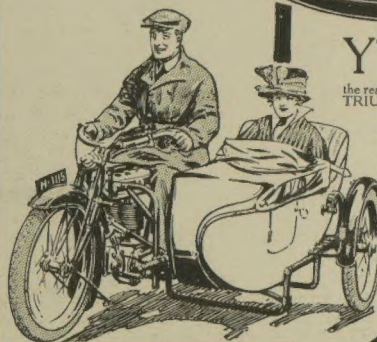
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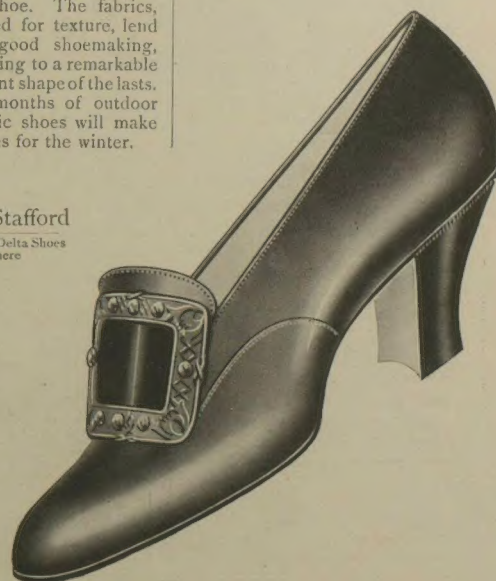
The fabric shoes vary in colour; there is a brown, a fawn, and a black. The black looks just like a suede leather shoe. The fabrics, carefully selected for texture, lend themselves to good shoemaking, taking and keeping to a remarkable degree the elegant shape of the lasts.

After some months of outdoor wear these fabric shoes will make good house shoes for the winter.

Some cost 19/9 a pair, others 21/-, and in all probability they are the best shoe value obtainable to-day. They have the name Delta and the price branded on the soles and can be bought in every town at the shops appointed to sell Lotus and Delta.

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THE "NAVAL ANNUAL." OLD NAVY AND NEW.

THE war has ended, and, secrecy being no longer necessary as to the number and types of our men-of-war, the Admiralty has co-operated with Earl Brassey and Mr. John Leyland in the production of a new volume of the *Naval Annual*. (William Clowes and Son, Ltd.: 21s. net). The editors will be congratulated by all who are concerned with the maintenance of our essential naval supremacy on producing a volume which is a revelation of British character and British achievement, for they present a record unique in the annals of the great maritime nations.

The *Naval Annual* was founded by the late Earl Brassey in 1886. At that time we were falling behind in the competition of armaments, and competent authorities held that the British Fleet barely reached a One Power standard. There were six other considerable Navies in Europe, and in succeeding years strenuous efforts had to be made to regain our traditional supremacy. In the education of public opinion, the *Naval Annual*, making an authoritative appearance from year to year, had no small part; and the present Lord Brassey, in resuming publication, is not only carrying out the last wish of his father, but is rendering no mean service to the peoples of the Empire. The League of Nations is coming into existence, but nothing has yet occurred which would justify this country in neglecting its Fleet. The British Navy made the main contribution to the victory of the Allies. Who can say that it may not prove in the future the essential guarantee of the peace of the world?

Lord Brassey, in an informative chapter on the comparative strength of the Fleets of the world, presents a consolatory and enheartening picture of our naval position. The German, Austro-Hungarian, Turkish, and Russian

Fleets have disappeared as effective forces, and there remain in Europe only two other Navies, those of France and Italy. On the other hand, the United States and Japan, which were of small account when the late Lord Brassey founded the *Naval Annual*, have become Sea Powers of the first class, and are, indeed, the only countries where battle-ship construction is proceeding. France and Italy have on the stocks five and four battle-ships respectively, but little or no progress is being made with them, and neither country possesses battle-cruisers.

As the figures given by Lord Brassey indicate, there was never a time when our naval supremacy, judged on the basis of material, was so unquestionable as to-day. We possess forty-four Dreadnoughts—battle-ships and battle-cruisers—to twelve under the French flag and six under that of Italy; the United States has seventeen vessels, and Japan seven. In completed ships we have, therefore, a margin, if a narrow margin, over the remaining naval Powers of the world. Our lead in light cruisers is even more considerable, since we possess seventy-seven as compared with three French and six Italian; while the United States has only three and Japan eight. Nor is there any indication that this balance of strength in swift scouting ships will be seriously affected during the next few years. No estimate is made of the number of submarines in the British Fleet, but the number must be very large; on the other hand, in modern destroyers we reach a total of 288, France and Italy combined having only 124; the United States has 95, and Japan 89.

How we have managed to attain our present position of pre-eminence by sea is explained by Commander C. N. Robinson and Mr. Alexander Richardson, M.P., who describe the progress of construction in war time and the development in war-ship propelling machinery in two lucid chapters. Between the opening of the war and its close, the Admiralty built ships of a variety of classes,

with an aggregate displacement of some 2,000,000 tons, at a cost of between £250,000,000 and £300,000,000. When the late Lord Brassey issued the first *Naval Annual* in 1886, the ship which held pride of place in the British Fleet was the battle-ship *Rodney*, displacing 9700 tons; she was designed for a speed of 17 knots and mounted four 13.5 inch guns. We are now completing a Dreadnought named after another famous Admiral, Lord Hood, which is a combination of the offensive and defensive qualities of the battle-ship and the battle-cruiser, the gun-power, speed, and protection of the two types being so provided for that no one quality is sacrificed to the other. Although the *Naval Annual* gives no details of this ship, it is widely known that she will be more heavily gunned and armoured than any man-of-war hitherto built; will displace about 40,000 tons; and, as the Admiralty has revealed, will cost upwards of £6,000,000, as compared with less than three-quarters of a million expended on the *Rodney*.

For the rest, the new *Naval Annual* deals succinctly with the work of the Allied Navies in the war, the mastering of the enemy's submarines, Admiralty administration, naval education, welfare conditions in the Fleet, and the progress of aircraft. It also contains a variety of official papers, despatches, and statistics, useful for purposes of reference.

ARCHIBALD HURD.

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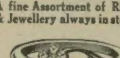
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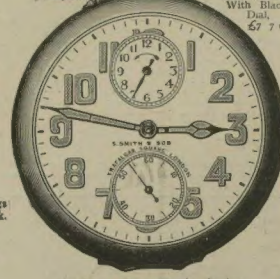
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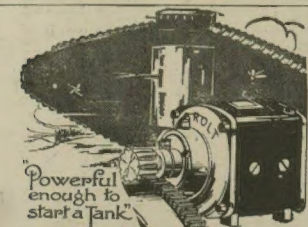
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